



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

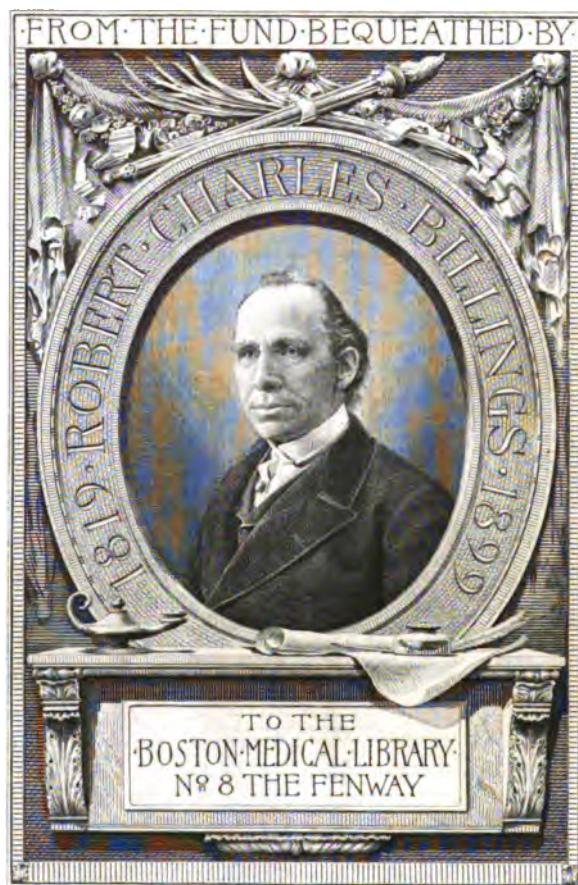
We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

HC 4BX2 -



AN ATLAS
OF
HUMAN ANATOMY
FOR STUDENTS AND PHYSICIANS

BY
CARL TOLDT, M.D.
PROFESSOR OF ANATOMY IN THE UNIVERSITY OF VIENNA

ASSISTED BY
PROFESSOR ALOIS DALLA ROSA, M.D.

Translated from the Third German Edition and adapted to English and American and
International Terminology

BY
M. EDEN PAUL, M.D. BRUX., M.R.C.S., L.R.C.P.

SIXTH SECTION
G. NEUROLOGY
H. THE ORGANS OF THE SENSES
(FIGURES 1124 TO 1505 AND INDEX)



LONDON:
REBMAN LIMITED
129 SHAFTESBURY AVENUE, W.C.

NEW YORK:
REBMAN COMPANY
10 WEST 23D STREET

1904

4970,
10/18/1905.


GENERAL TABLE OF CONTENTS

Part I.

A. The Regions of the Human Body (Figs. 1 to 5).

B. Osteology (Figs. 6 to 377). With Index.


Price, bound in cloth, 9s. net (\$2.50).

 [Ready.]

Part II.

C. Arthrology (Figs. 378 to 489). With Index.

Price, bound in cloth, 6s. net (\$1.75).

 [Ready.]

Part III.

D. Myology, with a Supplement on the Anatomy of Hernia (Figs. 490 to 640). With Index.


Price, bound in cloth, 8s. 6d. net (\$2.50).

 [Ready.]

Part IV.


E. Splanchnology (Figs. 641 to 932). With Index.

Price, bound in cloth, 9s. 6d. net (\$2.75).

 [Ready.]

F. Angeiology (Figs. 933 to 1,123). With Index.

Price, bound in cloth, 13s. 6d. net (\$3.75).

 [Ready.]

Part VI.

G. Neurology (Figs. 1,124 to 1,333).

H. The Organs of the Senses (Figs. 1,334 to 1,505). With Index.

Price, bound in cloth, 16s. 6d. net (\$4.75).

 [Ready.]

The six demy 4to. volumes complete, bound in cloth, £3 3s. net (\$18).

NEUROLOGIA

NEUROLOGY

ERRATUM IN PART VI. OF TOLDT'S "ATLAS OF HUMAN ANATOMY."

Page 833, right-hand column, tenth entry, for "**plantar**" read "**palmar**."

NEUROLOGY—GENERAL CONSIDERATIONS

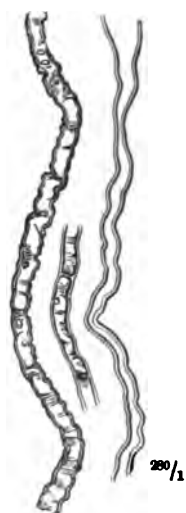


FIG. II24.—MEDULLATED NERVE FIBRES,³ FROM A PERIPHERAL NERVE TEASED OUT IN NORMAL SALT SOLUTION.

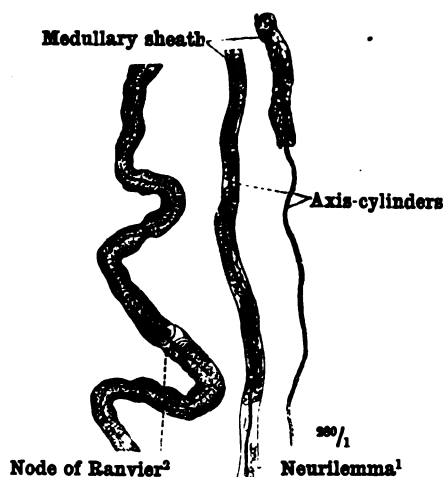


FIG. II25.—MEDULLATED NERVE FIBRES³; THE AXIS-CYLINDER HAS BEEN RENDERED VISIBLE BY TREATMENT WITH MÜLLER'S FLUID.

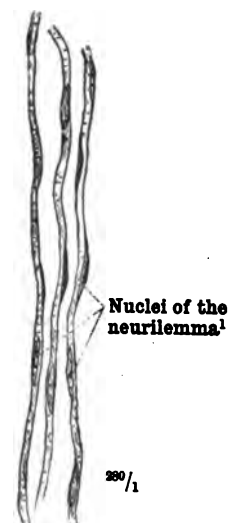


FIG. II26.—NON-MEDULLATED NERVE FIBRES³ INVESTED WITH NEURILEMMA (see Appendix, note ³¹⁸), FROM THE CORD OF THE SYMPATHETIC NERVE.

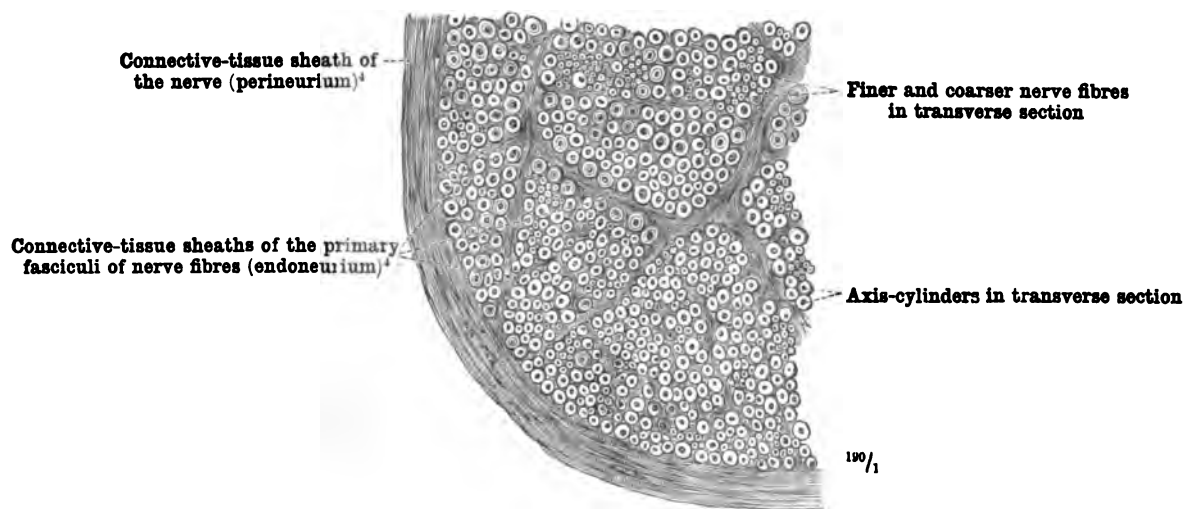


FIG. II27.—TRANSVERSE SECTION OF A PORTION OF THE HUMAN MEDIAN NERVE. (See Appendix, conclusion of note ³²⁰.)

¹ See Appendix, note ³¹⁸.

² Quain gives *constriction (of Ranvier)* as an alternative name for the *node of Ranvier*, but the latter term is that in general use.—TR.

³ See Appendix, note ³¹⁹.

⁴ See Appendix, note ³²⁰.

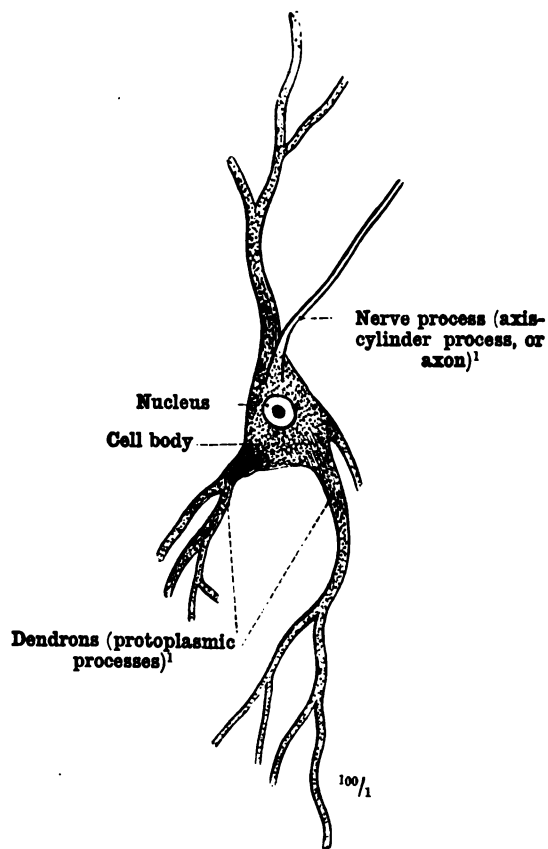


FIG. 1128.—MOTOR NERVE CELL FROM THE ANTERIOR COLUMN OF THE HUMAN SPINAL CORD.

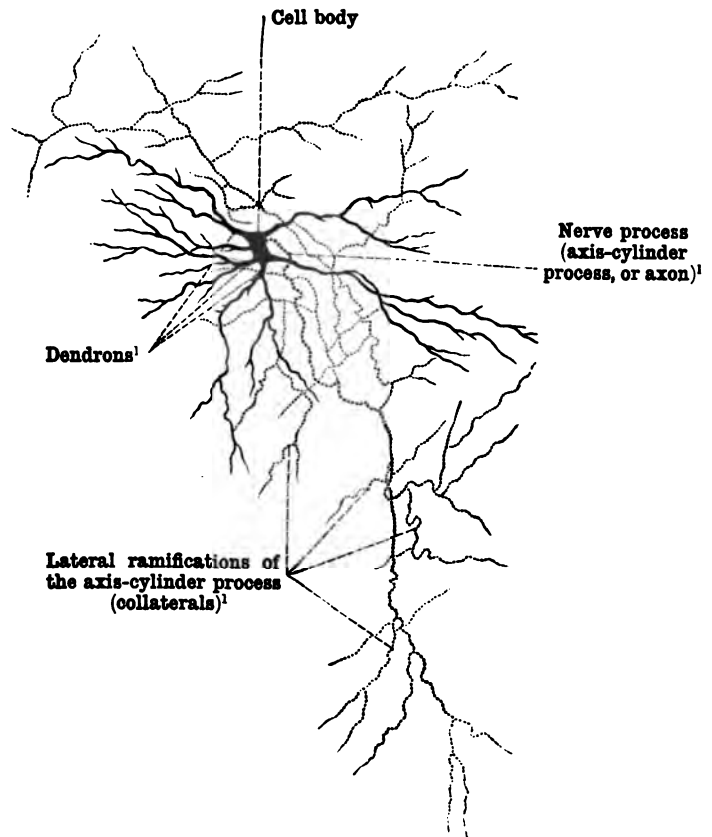


FIG. 1129.—TYPE OF SENSORY NERVE CELL (AFTER GOLGI).

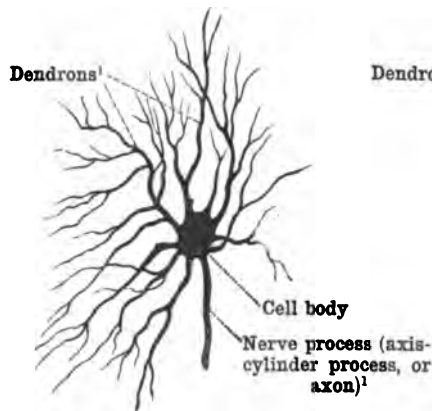


FIG. 1130.—GANGLION CELLS FROM THE SYMPATHETIC NERVOUS SYSTEM.

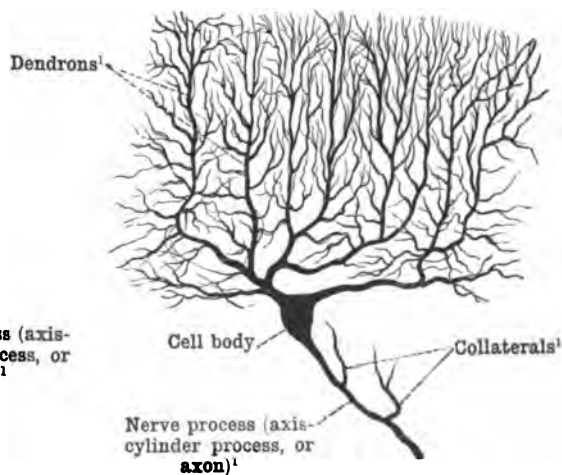


FIG. 1131.—CELL OR CORPUSCLE OF PURKINJE FROM THE HUMAN CEREBELLUM (AFTER GOLGI).

* See Appendix, note 321.

Nerve Cells.

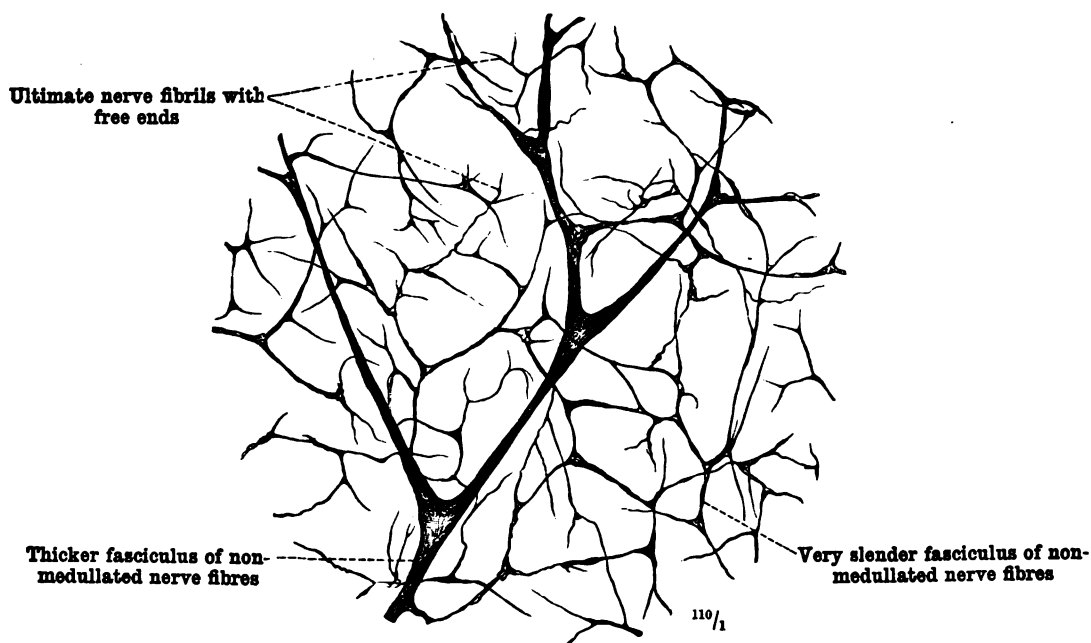


FIG. 1132.—NERVES OF THE CORNEA, STAINED WITH CHLORIDE OF GOLD. PERIPHERAL TERMINAL NETWORK¹ OF SENSORY NERVES WITH ULTIMATE FIBRILS ENDING FREELY. THE PLANE OF THE NETWORK IS PARALLEL WITH THE SURFACE OF THE CORNEA.

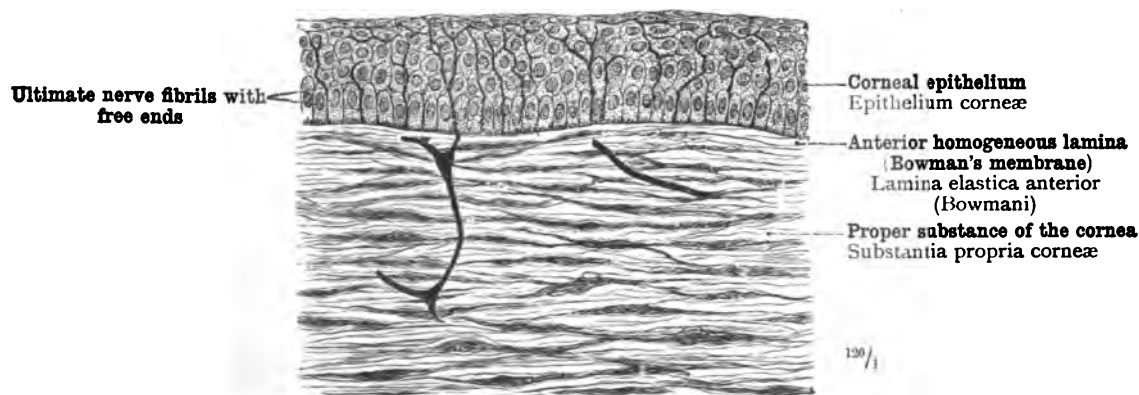


FIG. 1133.—NERVES OF THE CORNEA, STAINED WITH CHLORIDE OF GOLD. VERTICAL SECTION THROUGH THE ANTERIOR PORTION OF THE CORNEA. THE NERVE FIBRILS END FREELY IN THE EPITHELIUM.²

¹ See Appendix, note 322.

² See Appendix, note 323.

Free Peripheral Ending of Sensory Nerve Fibres.

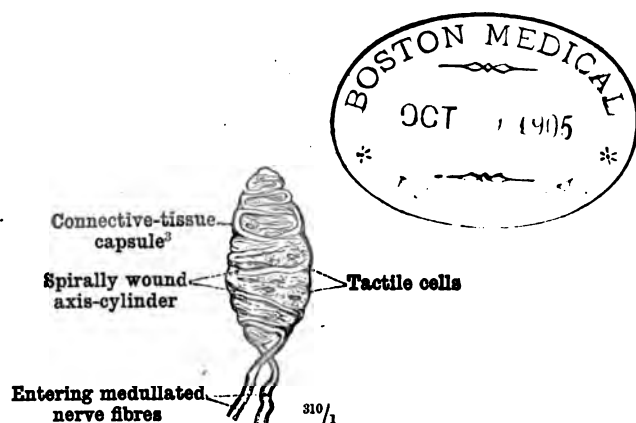


FIG. 1134.—TOUCH CORPUSCLE,¹ CORPUSCULUM TACTIS, FROM THE FINGER-TIP OF AN ADULT MAN.

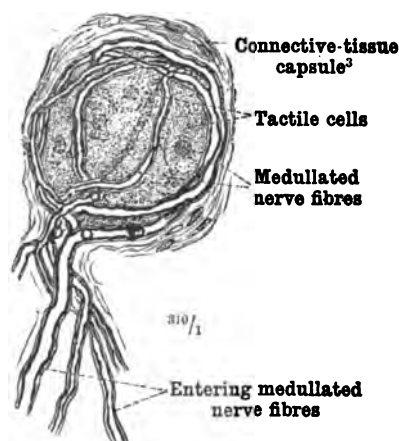


FIG. 1135.—SPHEROIDAL END-BULB OF KRAUSE, CORPUSCULUM BULBOIDEUM, FROM THE HUMAN CORNEA.

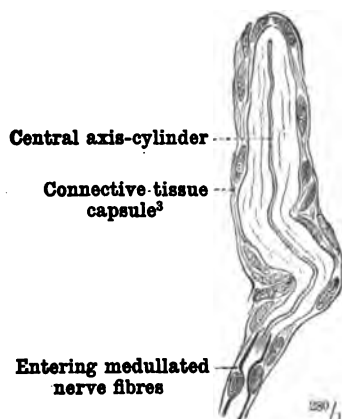


FIG. 1136.—CYLINDRICAL END-BULB FROM THE CONJUNCTIVA OF THE CALF.

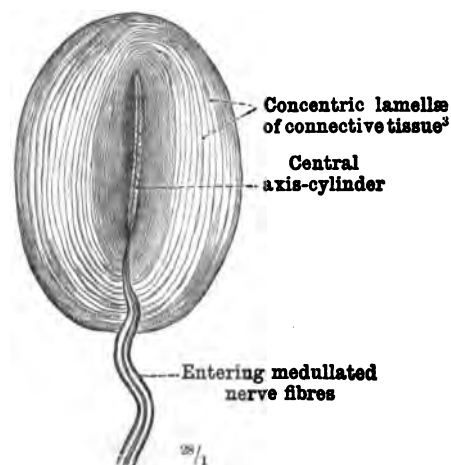


FIG. 1137.—PACINIAN CORPUSCLE,² CORPUSCULUM LAMELLOSUM, FROM THE MESOCOLON OF THE CAT.

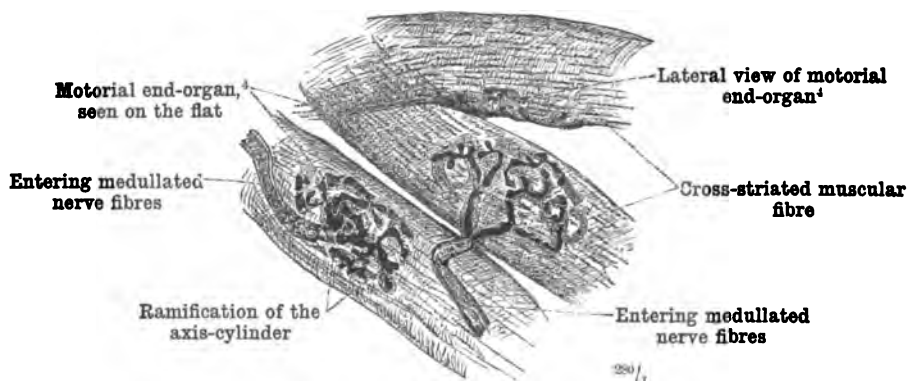


FIG. 1138.—TERMINATION OF MOTOR NERVE FIBRES IN CROSS-STRIATED MUSCULAR FIBRES.

¹ See Appendix, note 324.

² See Appendix, note 325.

³ See Appendix, note 326.

⁴ *Motorial End-Organ*.—The term *end-organ* is rightly preferred by Quain to the more familiar *end-plate*, this structure being, as the figure shows, not a continuous plate, but a flattened ramification.—TR.

Terminal corpuscles of sensory nerves, Corpuscula nervorum sensibilibus terminalia.—
Motorial end-organs (end-plates). (See note ⁴ above.)



FIG. 1139.—DIAGRAMMATIC REPRESENTATION OF THE ORIGIN, COURSE, AND PERIPHERAL DISTRIBUTION OF A MOTOR NERVE FIBRE.

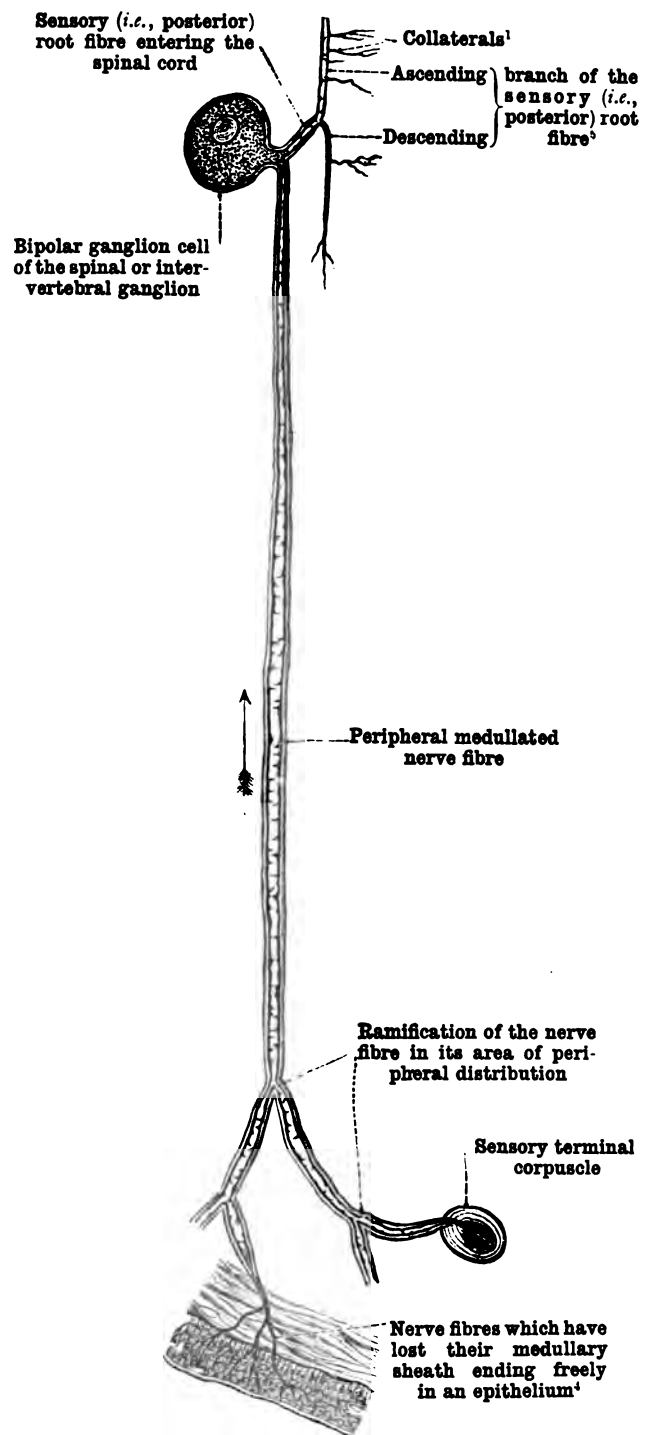


FIG. 1140.—DIAGRAMMATIC REPRESENTATION OF THE ORIGIN, COURSE, AND PERIPHERAL DISTRIBUTION OF A SENSORY NERVE FIBRE.

In both figures the arrows indicate the direction in which the nervous impulse passes.

¹ See Appendix, note 321.

² See Appendix, note 319.

³ See note 4 to p. 749.

⁴ See Appendix, note 323.

⁵ See note 9 to p. 755.

Origin and Termination of Nerve Fibres.

SYSTEMA NERVORUM
CENTRALE
THE
CENTRAL NERVOUS SYSTEM

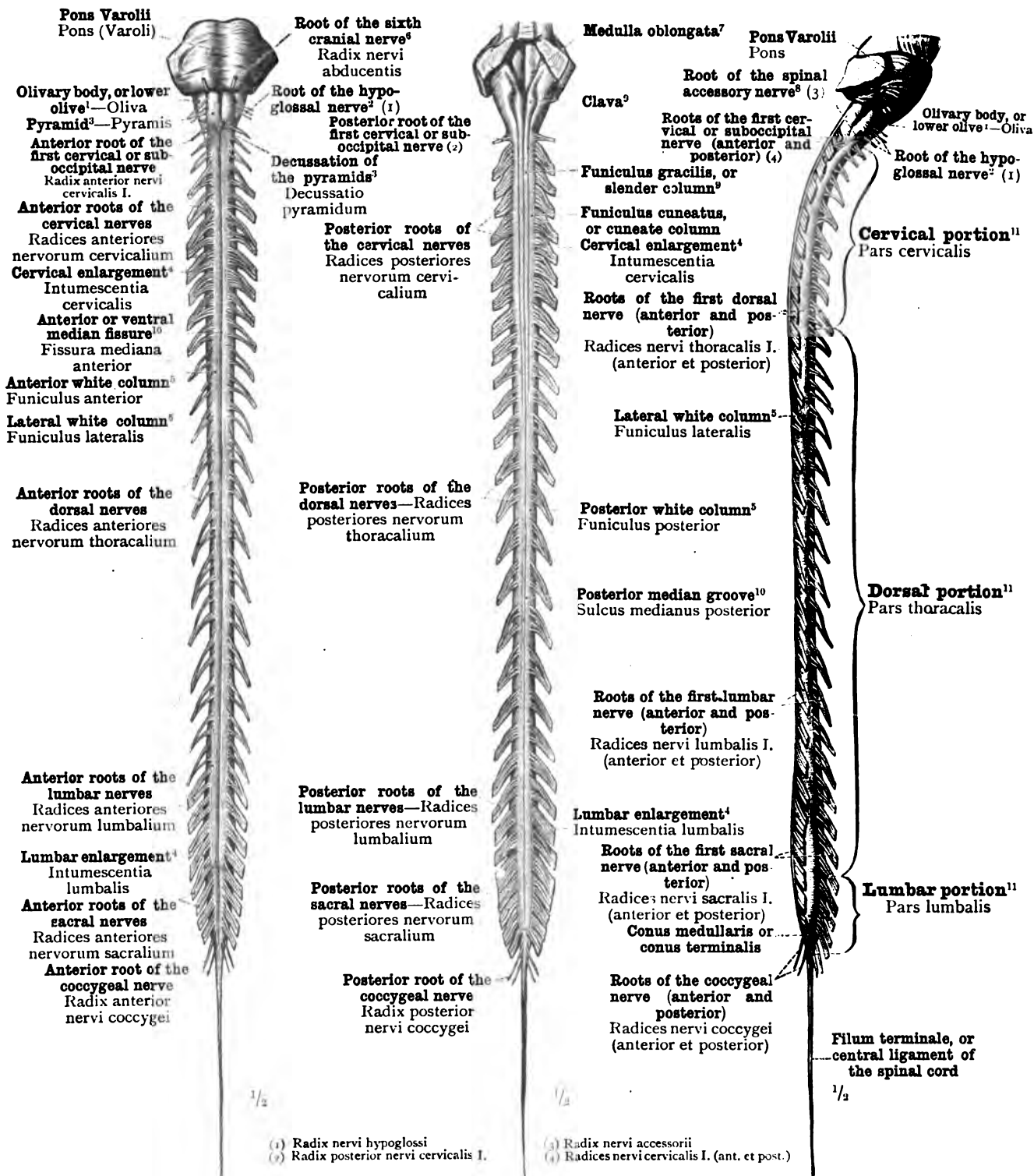


FIG. 1141.—SEEN FROM BEFORE.

FIG. 1142.—SEEN FROM BEHIND.

FIG. 1143.—SEEN FROM THE RIGHT SIDE.

¹ See Appendix, note 327.
² Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; sometimes also known as the lingual motor nerve.
³ See Appendix, note 328.
⁴ See Appendix, note 329.
⁵ See Appendix, note 330.
⁶ Known also as the abducent ocular nerve.
⁷ See Appendix, note 331.
⁸ Tenth cranial nerve in Soemmerring's enumeration, accessory portion of the eighth cranial nerve in that of Willis.
⁹ The funiculi graciles with their clavae are sometimes described as the posterior pyramids.
¹⁰ See Appendix, note 332.
¹¹ See Appendix, note 333.

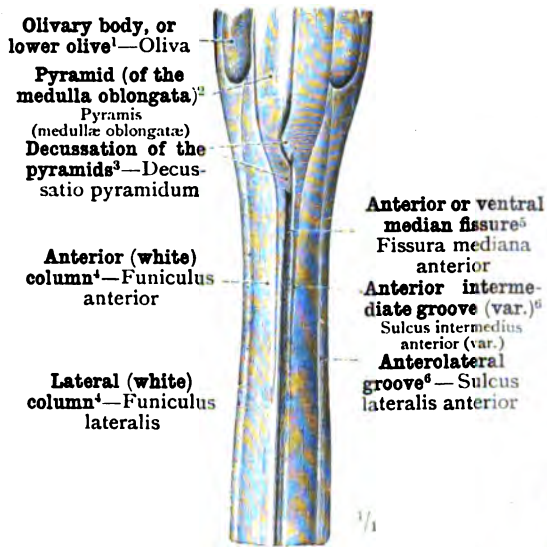


FIG. 1144.—THE CERVICAL PORTION OF THE SPINAL CORD, PARS CERVICALIS MEDULLÆ SPINALIS (see Appendix, note ³³³), WITH THE ADJOINING PORTION OF THE MEDULLA OBLONGATA, SEEN FROM BEFORE.

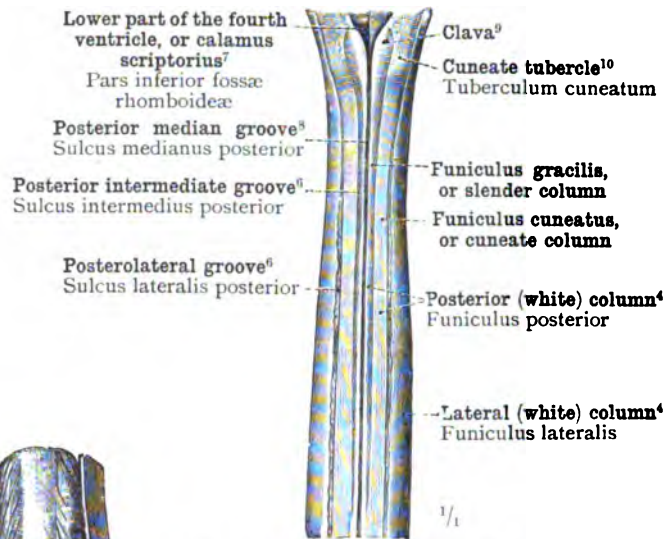


FIG. 1145.—THE CERVICAL PORTION OF THE SPINAL CORD, PARS CERVICALIS MEDULLÆ SPINALIS (see Appendix, note ³³³), WITH THE ADJOINING PORTION OF THE MEDULLA OBLONGATA, SEEN FROM BEHIND.

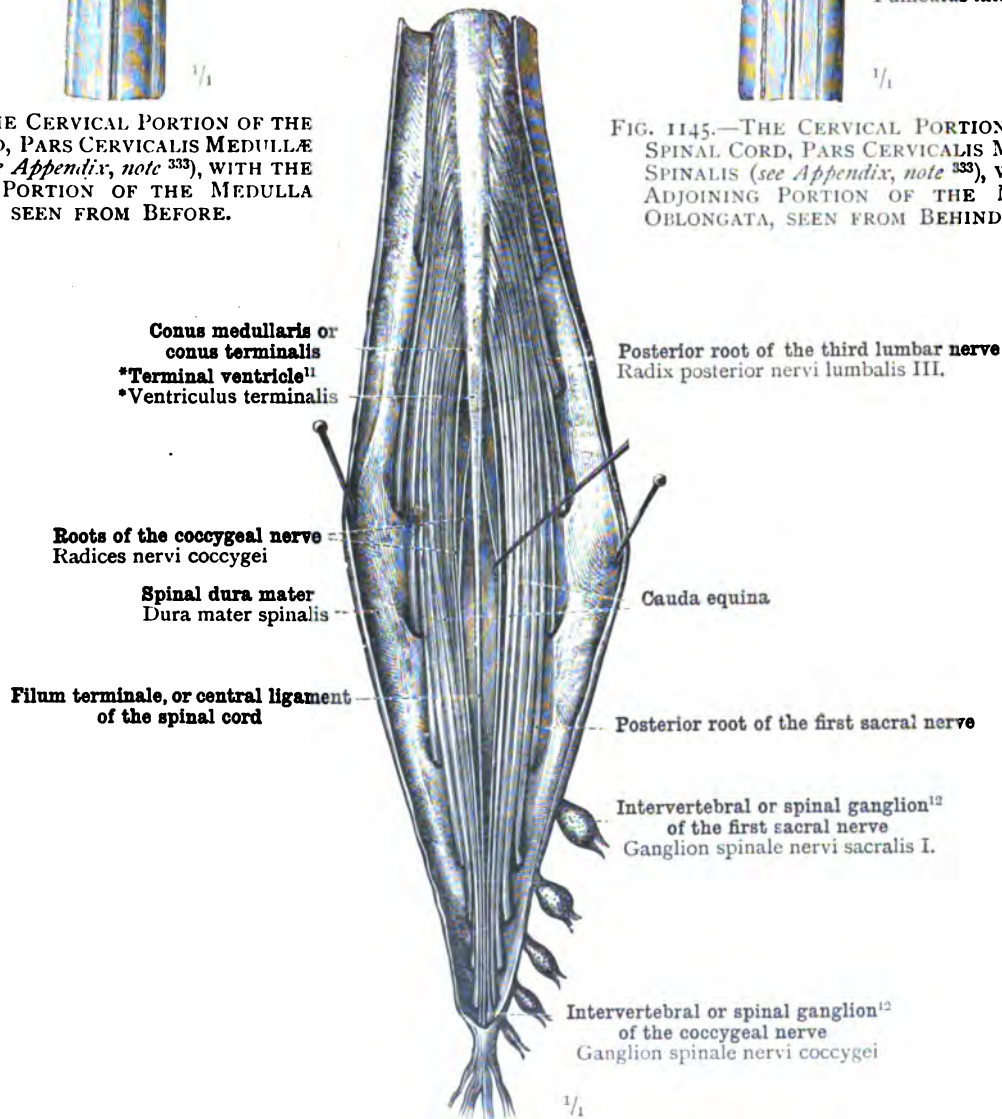


FIG. 1146.—THE LUMBAR PORTION OF THE SPINAL CORD, PARS LUMBALIS MEDULLÆ SPINALIS (see Appendix, note ³³³), WITH THE CONUS MEDULLARIS (OR CONUS TERMINALIS), THE FILUM TERMINALE (OR CENTRAL LIGAMENT OF THE SPINAL CORD), AND THE CAUDA EQUINA. SEEN FROM BEHIND.

¹ See Appendix, note 327.

² The words *medullae oblongatae* are added to distinguish the *pyramid of the medulla oblongata* from the *pyramis vermis*, the *pyramid of the lower worm of the cerebellum*. See also Appendix, note 328.

³ See Appendix, note 325.

⁴ See Appendix, note 329.

⁵ See Appendix, note 332.

⁶ See Appendix, note 335.

⁷ See Appendix, note 336.

⁸ See Appendix, note 337.

⁹ See Appendix, note 338.

¹⁰ See Appendix, note 339.

¹¹ See Appendix, note 330.

¹² See Appendix, note 334.

¹³ See Appendix, note 331.

¹⁴ See Appendix, note 332.

¹⁵ See Appendix, note 333.

¹⁶ See Appendix, note 334.

¹⁷ See Appendix, note 335.

¹⁸ See Appendix, note 336.

¹⁹ See Appendix, note 337.

²⁰ See Appendix, note 338.

²¹ See Appendix, note 339.

²² See Appendix, note 340.

²³ See Appendix, note 341.

²⁴ See Appendix, note 342.

²⁵ See Appendix, note 343.

²⁶ See Appendix, note 344.

²⁷ See Appendix, note 345.

²⁸ See Appendix, note 346.

²⁹ See Appendix, note 347.

³⁰ See Appendix, note 348.

³¹ See Appendix, note 349.

³² See Appendix, note 350.

³³ See Appendix, note 351.

³⁴ See Appendix, note 352.

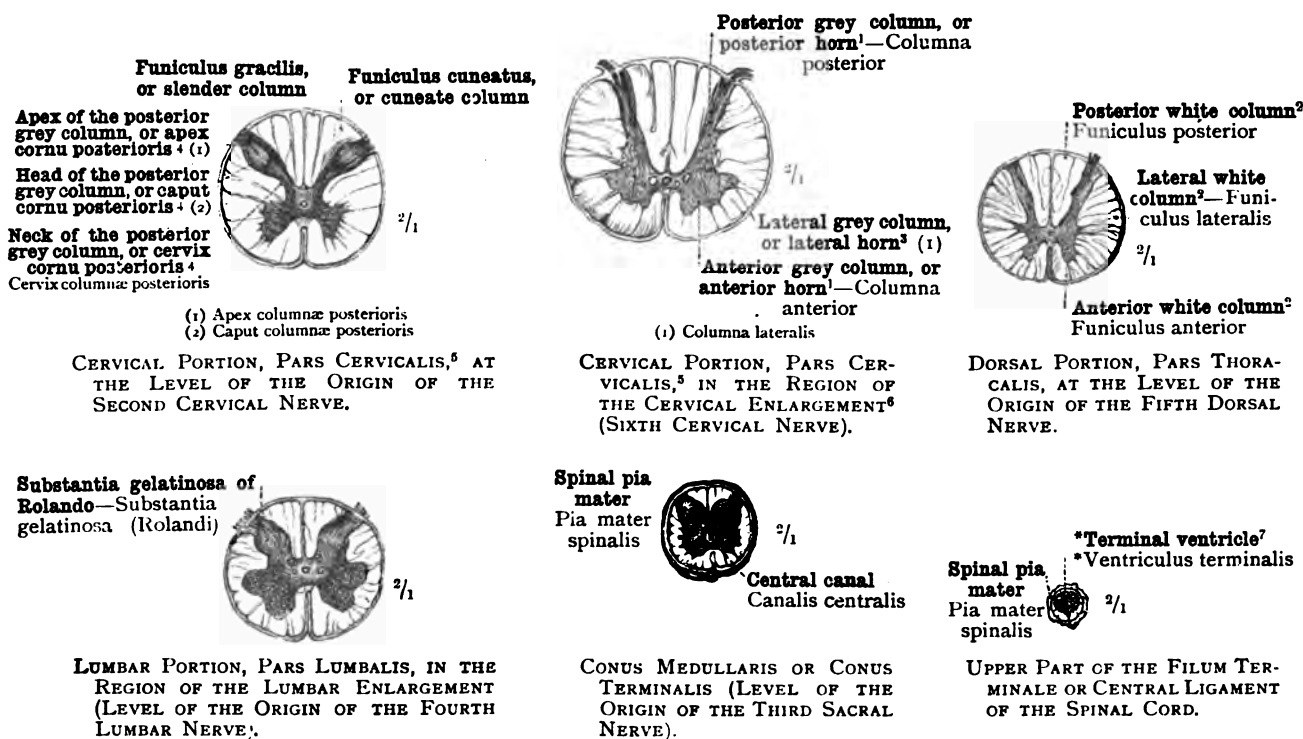
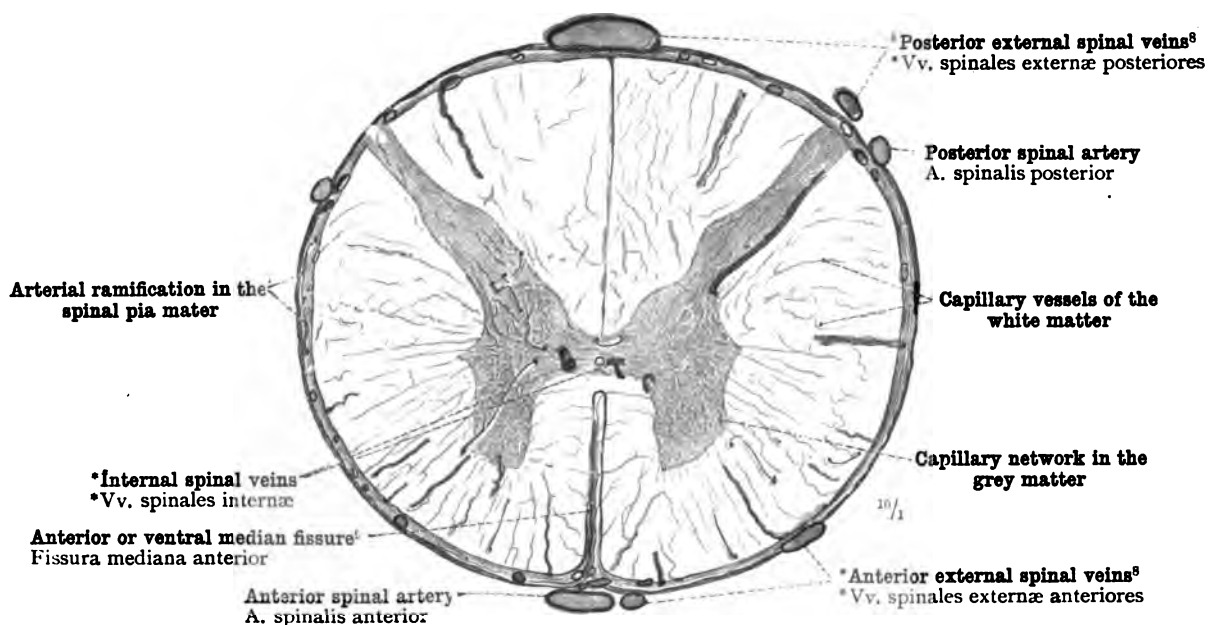


FIG. 1147.—TRANSVERSE SECTIONS OF THE SPINAL CORD OF AN ADULT MAN.

FIG. 1148.—THE BLOOD-SUPPLY OF THE SPINAL CORD. TRANSVERSE SECTION THROUGH THE LOWER END OF THE DORSAL PORTION (PARS THORACALIS)⁵.¹ See Appendix, note 339.² See Appendix, note 339.³ Better known as the *intermediolateral tract* of Lockhart Clarke (*intermediate process* of Gowers). Regarding the use of the term *lateral grey column*, see Appendix, note 339.⁴ The *posterior horn* consists of three parts: the *cervix*, the narrow base; the *caput*, the thickened main portion; and the *apex*, the thin posterior extremity just beneath the posterolateral groove. Regarding the use of the term *posterior grey column*, see Appendix, note 339.⁵ See Appendix, note 339.⁶ See Appendix, note 339.⁷ See Appendix, note 338.⁸ See Appendix, note 340.⁹ See Appendix, note 339.

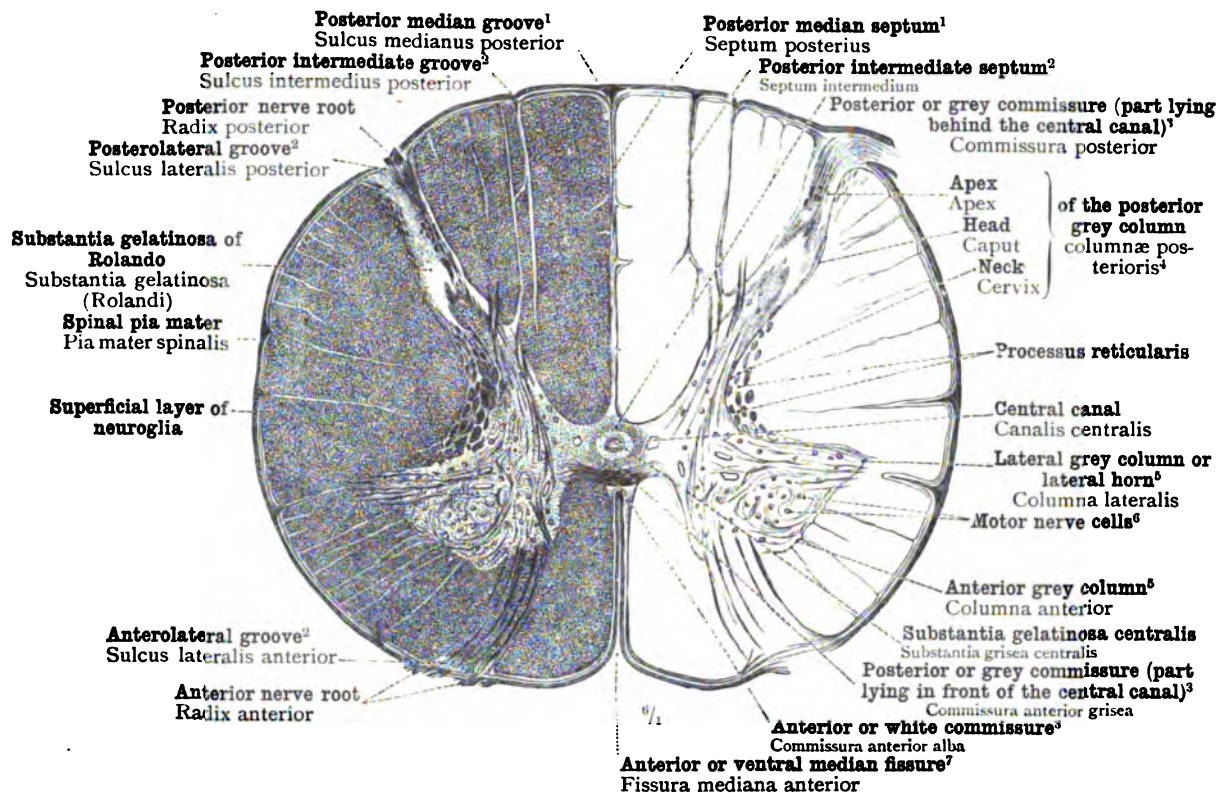


FIG. 1149.—TRANSVERSE SECTION THROUGH THE CERVICAL ENLARGEMENT, INTUMESCENTIA CERVICALIS,⁸ OF THE SPINAL CORD, AT THE LEVEL OF THE EMERGENCE OF THE ROOTS OF THE SIXTH CERVICAL NERVE.

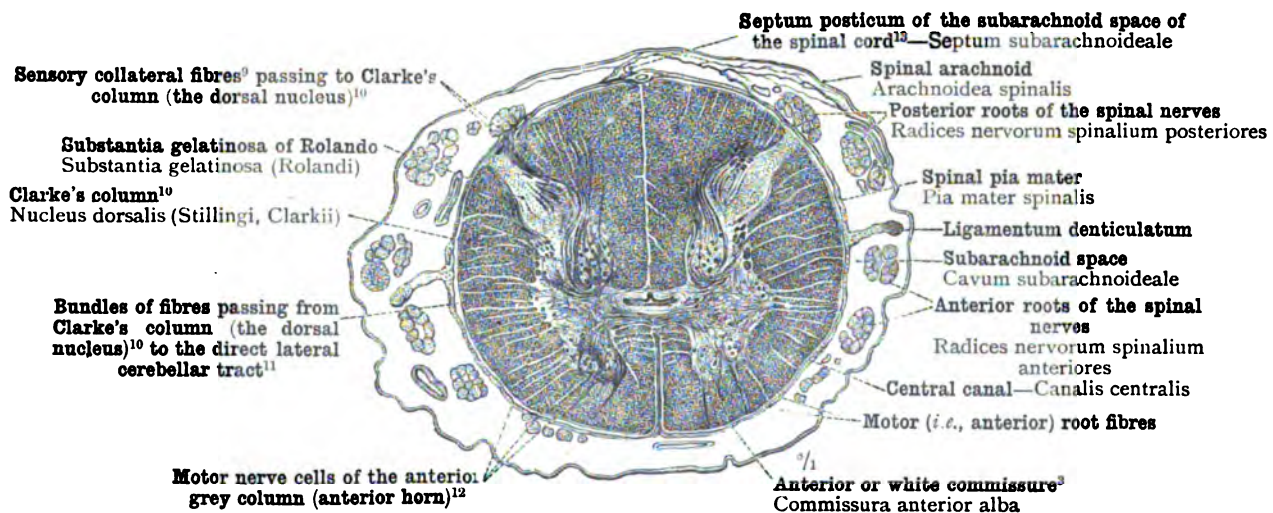


FIG. 1150.—TRANSVERSE SECTION THROUGH THE UPPERMOST PART OF THE LUMBAR PORTION OF THE SPINAL CORD (see Appendix, note 333), WITH THE PIA MATER AND THE ARACHNOID. THE POSTERIOR VESICULAR COLUMN OF LOCKHART CLARKE, OR DORSAL NUCLEUS, NUCLEUS DORSALIS.¹⁰ FROM A CHILD AGED THREE YEARS.

¹ See Appendix, note 332.

² See Appendix, note 335.

³ See Appendix, note 341.

⁴ Or apex cornu posterioris, caput cornu posterioris, and cervix cornu posterioris. See also note 4 to p. 754.

⁵ See Appendix, note 332.

⁶ Constituting the motor cell column or cell column of the anterior horn.

⁷ See Appendix, note 332.

⁸ See Appendix, note 329.

⁹ See Appendix, note 342.

¹⁰ See Appendix, note 343.

¹¹ See Appendix, note 344.

¹² These cells make up what Quain terms the motor cell column or the cell column of the anterior horn. Regarding the use of the term anterior grey column for the anterior horn, see Appendix, note 339.

¹³ See Appendix, note 345.

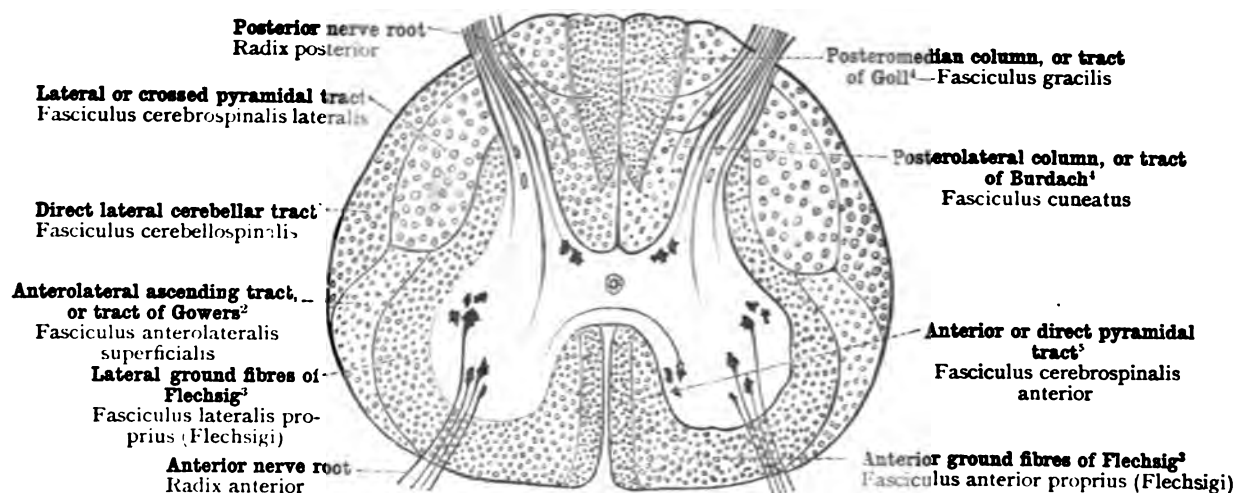


FIG. 1151.—DIAGRAMMATIC REPRESENTATION OF THE CONDUCTING SYSTEMS (CONDUCTING TRACTS) IN THE WHITE SUBSTANCE OF THE SPINAL CORD; AS SEEN IN A SECTION THROUGH THE LOWER EXTREMITY OF THE CERVICAL PORTION OF THE CORD (see Appendix, note ³³³).

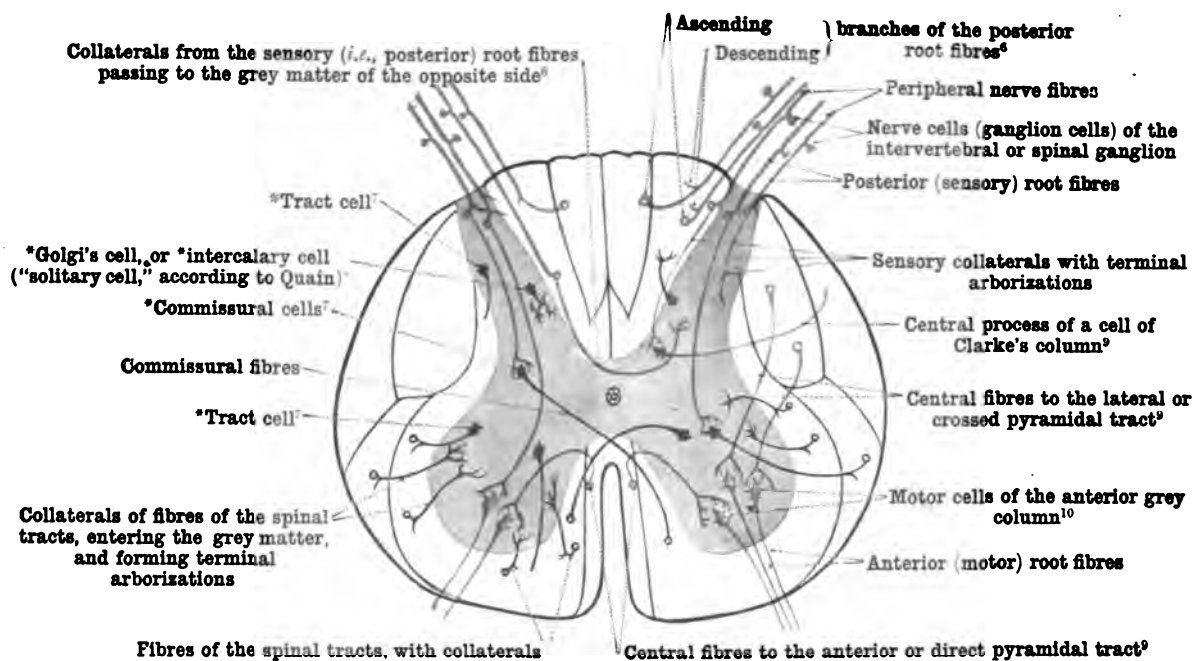


FIG. 1152.—DIAGRAMMATIC REPRESENTATION OF THE COURSE OF THE FIBRES OF THE SPINAL CORD, AS SEEN IN A SECTION THROUGH THE LOWER END OF THE CERVICAL PORTION OF THE CORD (see Appendix, note ³³³).

¹ See Appendix, note 344.

⁴ See Appendix, note 346.

⁶ See Appendix, note 342.

⁹ See Appendix, note 351.

² See Appendix, note 346.

⁵ Known also as the *column* or *tract of Törck*.

⁷ See Appendix, note 342.

¹⁰ See Appendix, note 339.

³ See Appendix, note 347.

⁸ See Appendix, note 350.

Decursus fibrarum spinalium—Course of the fibres of the spinal cord.

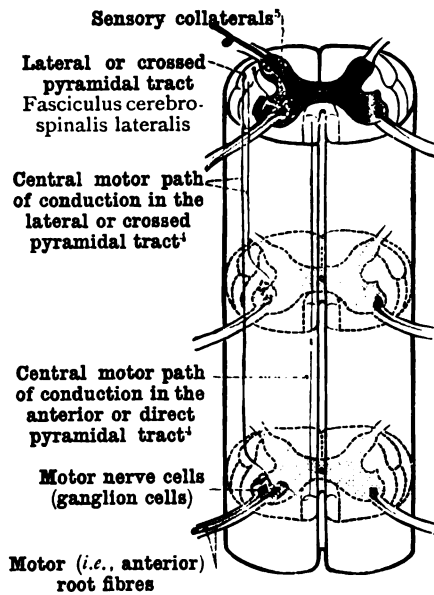


FIG. 1153.—DIAGRAMMATIC REPRESENTATION OF THE CENTRAL⁴ MOTOR PATHS OF CONDUCTION IN THE SPINAL CORD. SEEN FROM BEFORE.

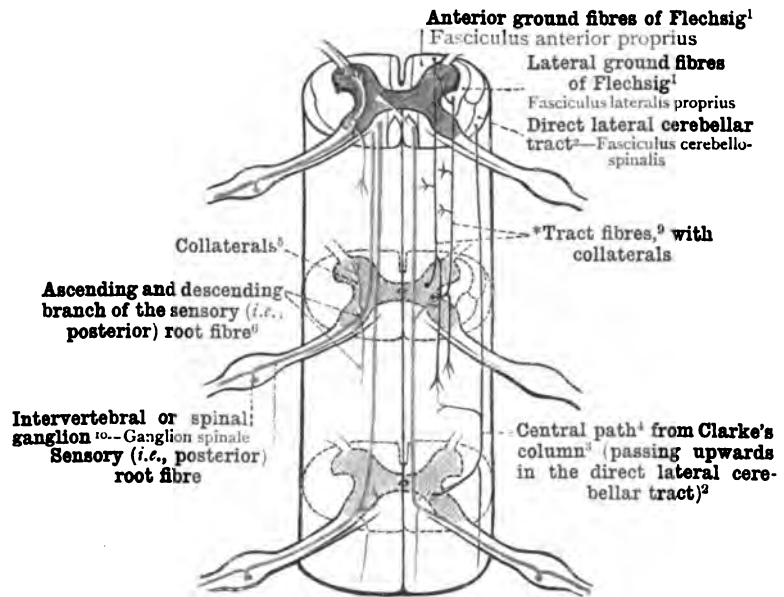


FIG. 1154.—DIAGRAMMATIC REPRESENTATION OF THE CENTRAL⁴ SENSORY PATHS OF CONDUCTION IN THE SPINAL CORD. SEEN FROM BEHIND.

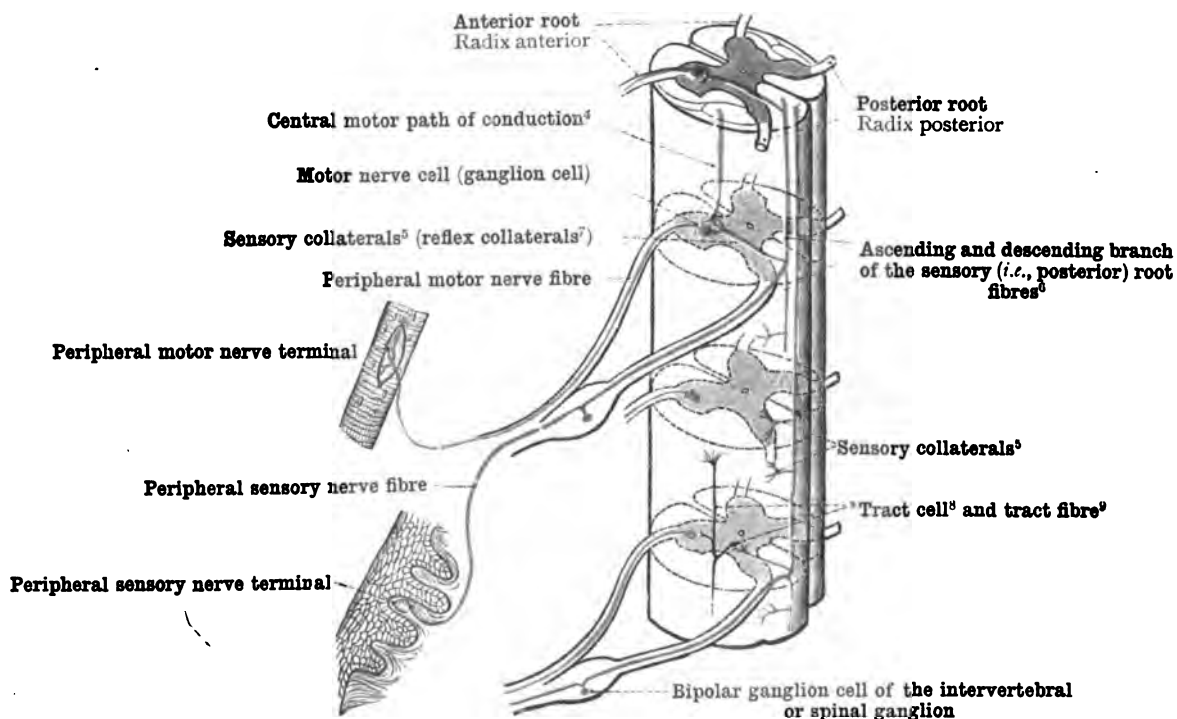


FIG. 1155.—DIAGRAMMATIC REPRESENTATION OF THE MOTOR AND SENSORY PATHS OF CONDUCTION, AND OF THE REFLEX ARCS OF THE SPINAL CORD.

¹ See Appendix, note 347.

² See Appendix, note 344.

³ See note 3 to p. 754.

⁴ Regarding the significance of the term *central* in these instances, see Appendix, note 331.

⁵ See Appendix, note 341.

⁶ See Appendix, note 342.

⁷ See Appendix, note 352.

⁸ See Appendix, note 349.

⁹ *Tract Fibre*.—The author uses the term *tract fibre* (*Strang-faser*) as an abbreviation for *fibre of one of the tracts of the white matter of the spinal cord*.

¹⁰ Also called the *ganglion of the posterior root*.

Decursus fibrarum spinalium—Course of the fibres of the spinal cord.

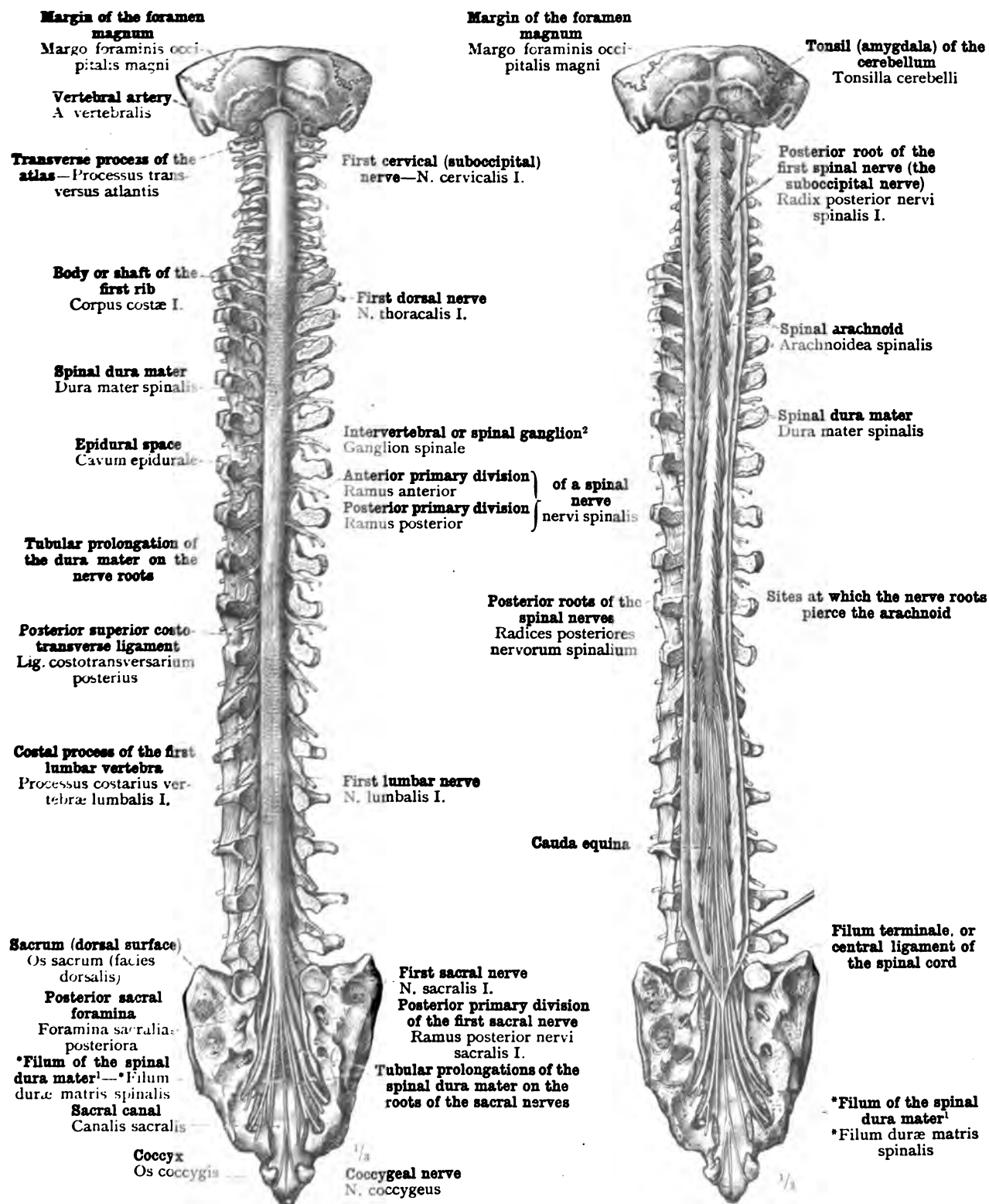
¹ See Appendix, note 351.² Also called the *ganglion of the posterior root*.

FIG. 1156.—THE SPINAL DURA MATER, DURA MATER SPINALIS, UNOPENED. SEEN FROM BEHIND.

FIG. 1157.—THE SPINAL DURA MATER, DURA MATER SPINALIS, AND THE SPINAL ARACHNOID, ARACHNOIDEA SPINALIS, BOTH OPENED FROM BEHIND.

Meninges spinales—The membranes of the spinal cord.

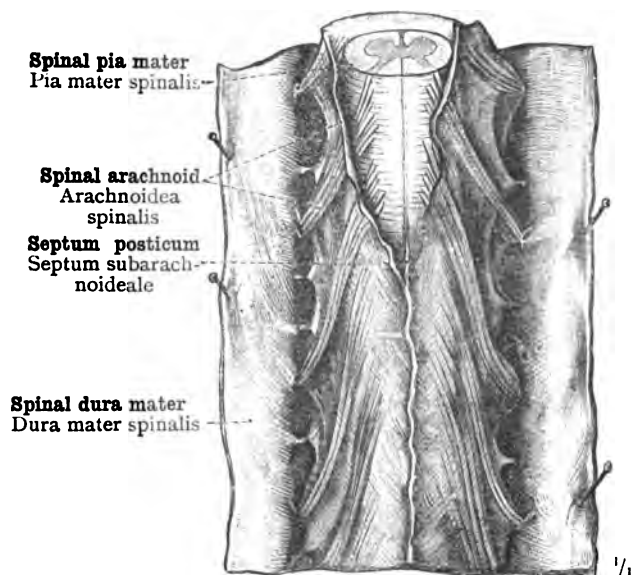


FIG. 1158.—THE SPINAL ARACHNOID, ARACHNOIDEA SPINALIS, EXPOSED IN PART OF THE CERVICAL PORTION OF THE SPINAL CORD¹ BY INCISING THE DURA MATER FROM BEHIND.

In the upper part of the preparation the arachnoid has been divided in the median line and the margins of the incision have been drawn apart.

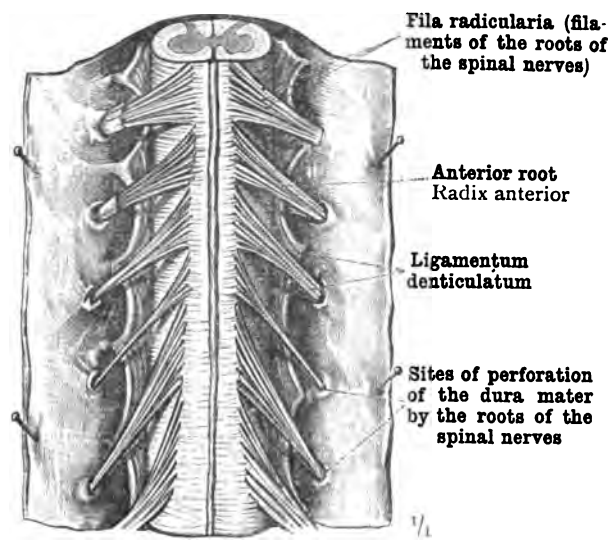


FIG. 1159.—THE LIGAMENTUM DENTICULATUM, WHICH SUPPORTS THE SPINAL CORD WITHIN THE THECA VERTEBRALIS, AS SEEN IN PART OF THE CERVICAL PORTION OF THE CORD,¹ AFTER THE DURA MATER HAS BEEN INCISED FROM BEFORE, AND THE ARACHNOID REMOVED FROM THE FRONT OF THE CORD.

¹ Also called the *ganglion of the posterior root*. See Appendix, note 333.

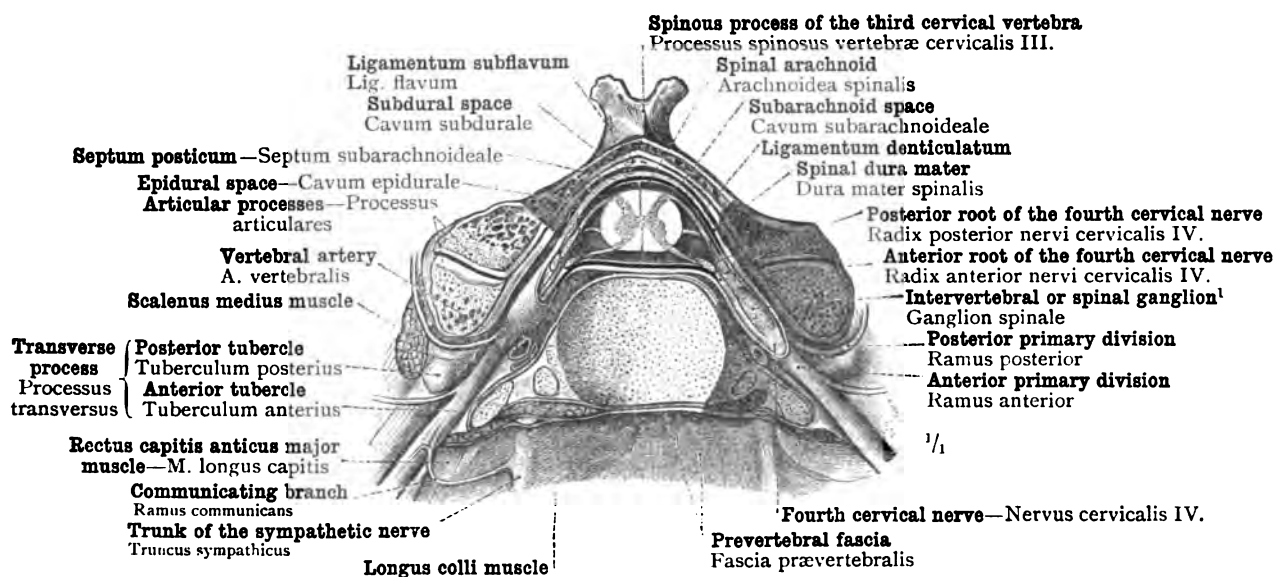


FIG. 1160.—TRANSVERSE SECTION THROUGH THE INTERVERTEBRAL DISC BETWEEN THE THIRD AND FOURTH CERVICAL VERTEBRÆ. THE MEMBRANES OF THE SPINAL CORD ARE SEEN IN TRANSVERSE SECTION, AND THEIR RELATION TO THE EMERGING SPINAL NERVE ROOTS IS DISPLAYED.

The subarachnoid space is printed yellow ; the subdural space, blue ; and the epidural space, black.

Meninges spinales—The membranes of the spinal cord.

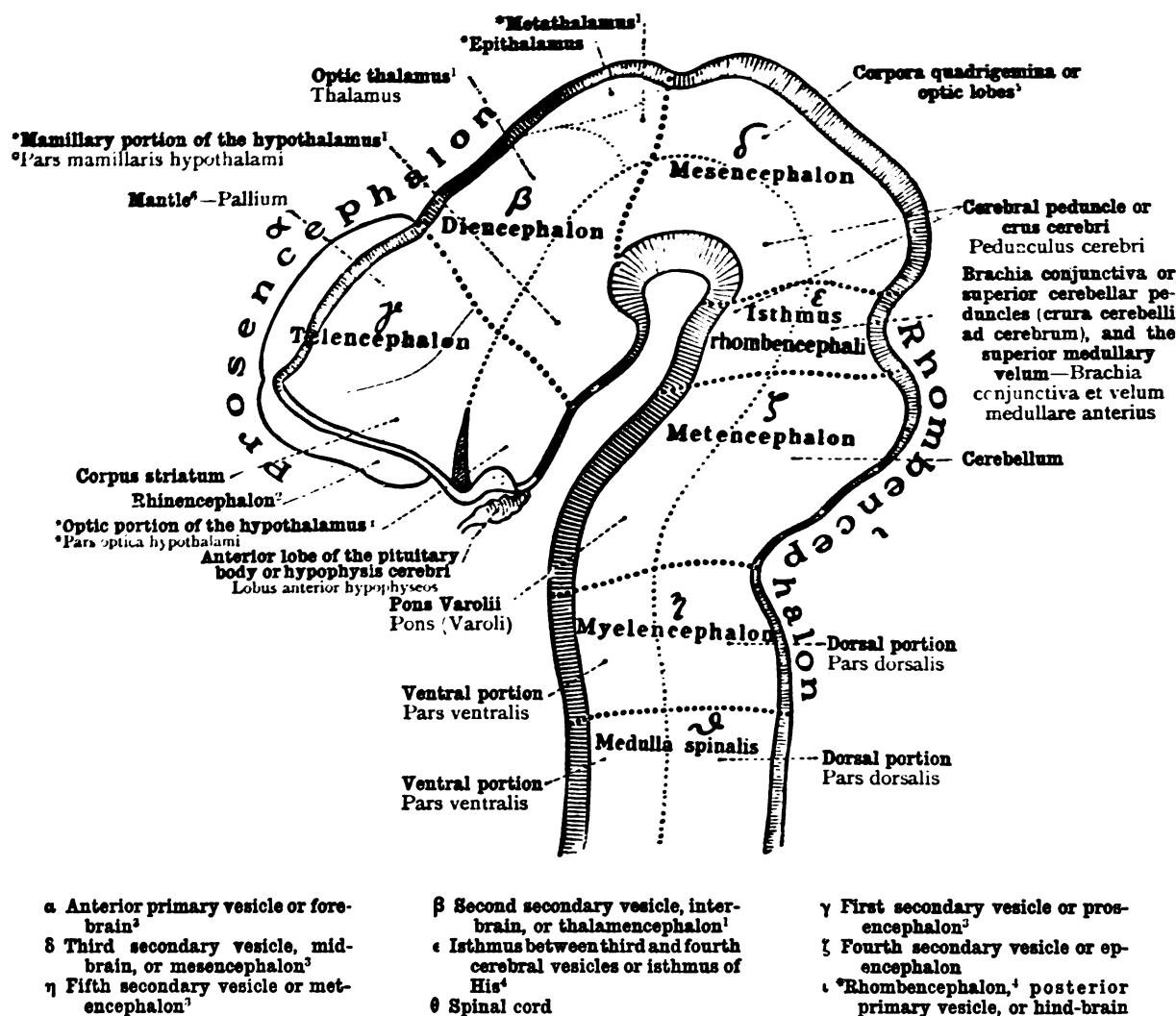


FIG. 1161.—MEDIAN SAGITTAL SECTION THROUGH THE BRAIN OF A HUMAN EMBRYO AT THE END OF THE FIRST MONTH OF INTRA-UTERINE LIFE (MONTH OF FOUR WEEKS ONLY). DIAGRAMMATIC. AFTER W. HIS.

¹ See Appendix, note 354.

² *Rhinencephalon*.—A name sometimes given to the combined *olfactory* and *limbic lobes*.

³ Some confusion is inevitable owing to the fact that the names given to the parts of the developing brain are used differently by Quain and by Von Langer and Toldt. The exact significance of the English renderings to the above diagram will be found in Quain's "Anatomy," vol. i., part i., p. 61. Here it is sufficient to indicate that—(1) the term *prosencephalon* is used by the German authors to denote the *anterior primary vesicle* or *fore-brain* as a whole, but by Quain to denote the *first secondary vesicle* only (called by Toldt *telencephalon*); (2) as the *middle primary vesicle* produces *one secondary vesicle* only (the *third*), the terms *mid-brain* and *mesencephalon* may be applied to this indifferently; (3) the term *epencephalon*, as used by Quain, appears to denote the combined *isthmus rhombencephali* and *metencephalon* of the German authors; and (4) the term *metencephalon*, as used by Quain, denotes what Von Langer and Toldt call the *myelencephalon*.

⁴ For the exact significance of the term *rhombencephalon* as used by the author, see Appendix, notes 355 and 369.

⁵ *Optic Lobes*.—This name is given by Macalister to the structures which nearly all other English anatomists agree in calling the *corpora quadrigemina*. The fact that the *corpora quadrigemina* of the mammalian brain are the homologues of the *corpora bigemina* or *optic lobes* of the avian brain does not seem an adequate reason for discarding an apt and well-established name.

⁶ *Mantle or Pallium*.—"The basal ganglia of the brain, together with the crura cerebri, pons, and medulla, are often distinguished as the *stem* of the brain [*caudex cerebri*, Ger. *Hirnstamm*] from the superimposed hemispheres, which are known as the *mantle* of the brain [*pallium*, Ger. *Hirnmantel*]" (Von Langer and Toldt, *op. cit.*, pp. 600, 601). Writing of the *first secondary vesicle* (*prosencephalon*), Quain (*op. cit.*, vol. iii., part i., pp. 69, 70) says: "The original vesicle is relatively small, although its lateral outgrowths form by far the largest portions of the brain in higher vertebrates. The *corpora striata* appear as thickenings of the floor of the hemisphere vesicles, and outside them the grey and white matter of the island of Reil becomes differentiated. The rest of the wall of the hemisphere vesicle (*mantle* of Reichert) eventually thickens to form the whole of the grey and white matter of the hemispheres."

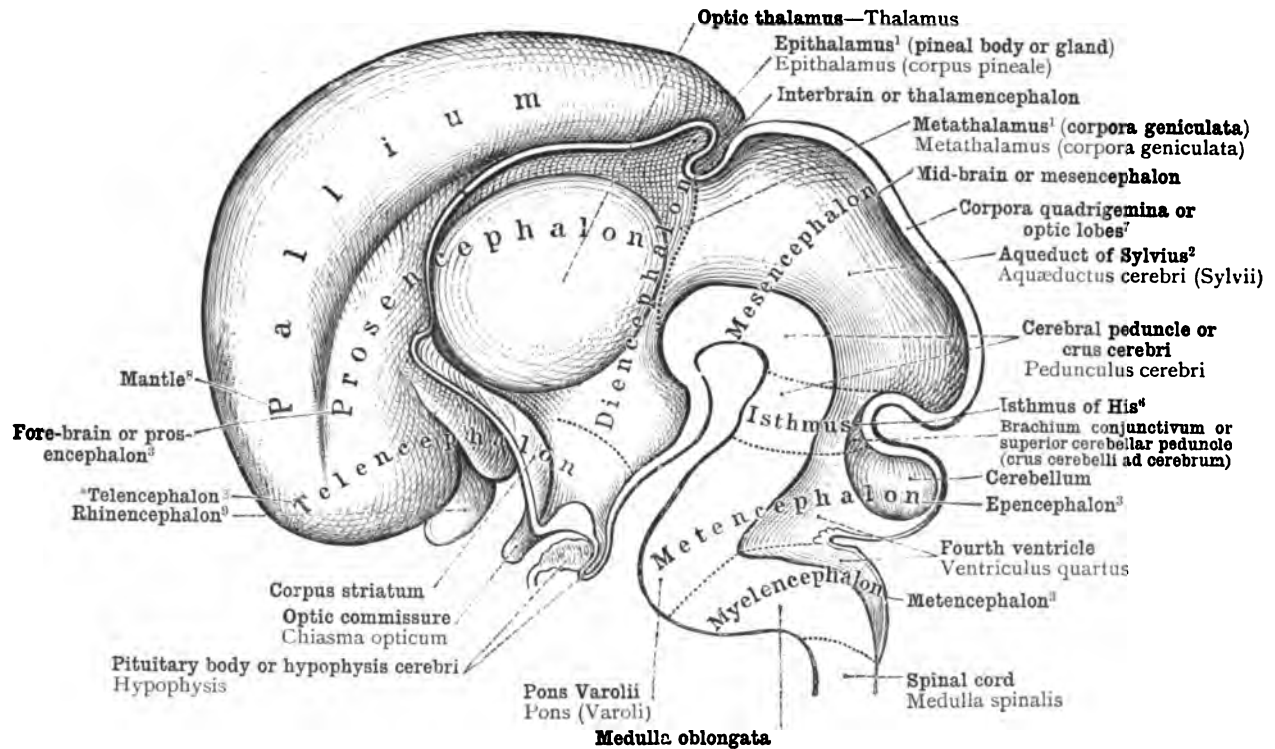


FIG. 1162.—MEDIAN SAGITTAL SECTION THROUGH THE BRAIN OF A HUMAN EMBRYO IN THE THIRD MONTH OF INTRA-UTERINE LIFE (MONTHS OF FOUR WEEKS EACH). AFTER W. HIS.

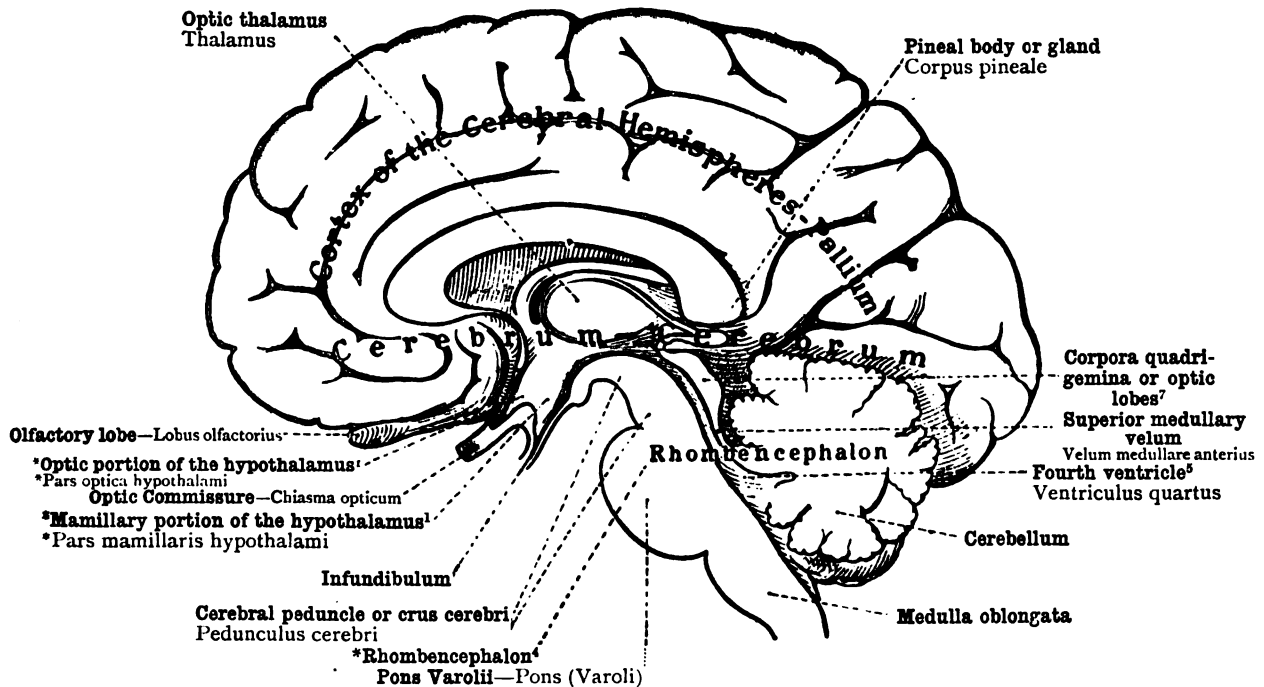


FIG. 1163.—MEDIAN SAGITTAL SECTION THROUGH THE ADULT HUMAN BRAIN. AFTER W. HIS.

¹ See Appendix, note 354.

² Or iter a tertio ad quartum ventriculum.

³ See note 3 to p. 760.

⁴ See Appendix, note 355.

⁵ Sometimes called fossa rhomboidalis. See also Appendix, note 355.

⁶ Isthmus of His.—This is the constriction between the third and fourth secondary vesicles. See Appendix, note 359.

⁷ See note 5 to p. 760.

⁸ See note 6 to p. 760.

⁹ See note 2 to p. 760.

Divisions of the Brain from the Embryological Standpoint.

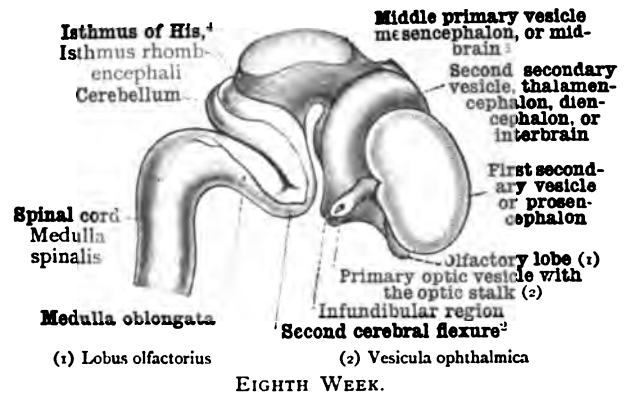
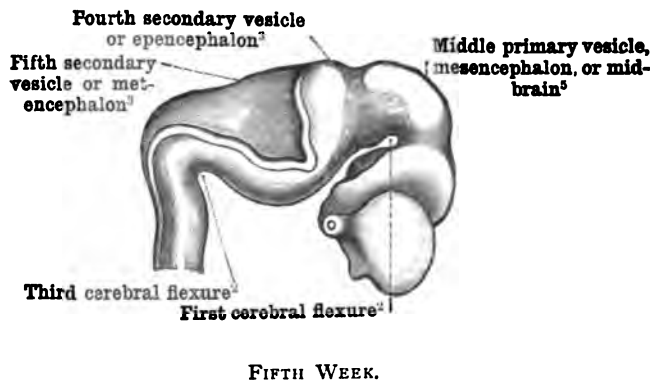
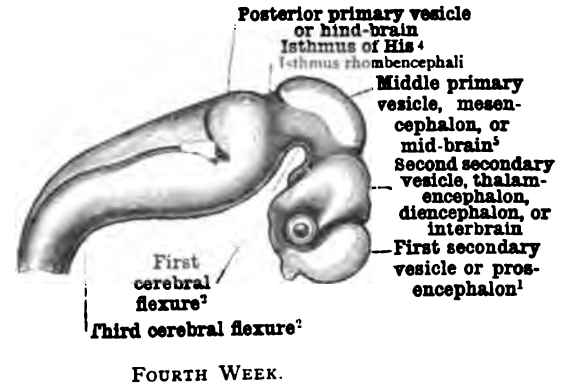
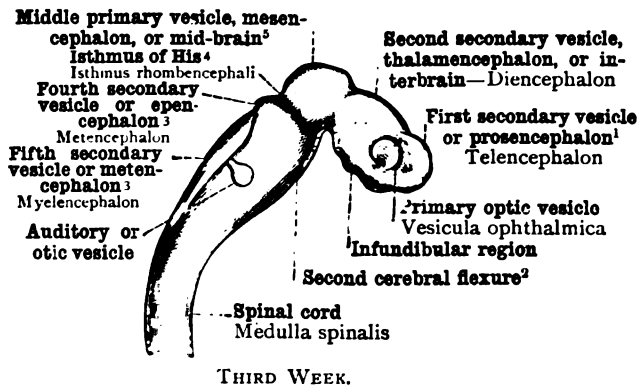


FIG. 1164.—RECONSTRUCTED FIGURES⁵ OF THE RUDIMENTARY BRAIN OF HUMAN EMBRYOS. AFTER W. HIS.

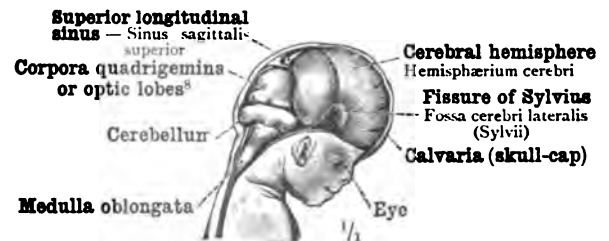
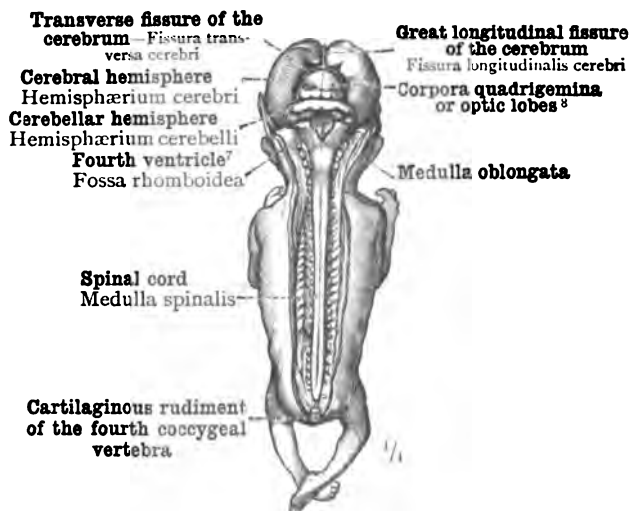


FIG. 1166.—BRAIN OF THE EMBRYO SHOWN IN FIG. 1165, SEEN IN THIS CASE FROM THE RIGHT SIDE.



FIG. 1165.—BRAIN AND SPINAL CORD OF A HUMAN EMBRYO AT THE END OF THE THIRD MONTH OF INTRA-UTERINE LIFE (MONTHS OF FOUR WEEKS EACH), SEEN FROM BEHIND.

Body-length, 6·2 centimetres (2·44 inches).

FIG. 1167.—INTERIOR OF THE RIGHT CEREBRAL HEMI-SPHERE, AS SEEN AFTER REMOVING THE CALVARIA (SKULL-CAP) AND THE CONVEX WALL OF THE CEREBRUM, IN THE EMBRYO SHOWN IN FIG. 1165.

¹ Telencephalon, according to Toldt. See note 3 to p. 760.

⁴ Isthmus of His.—This is the constriction between the third and fourth secondary vesicles. See Appendix, note 352.

⁵ See Appendix, note 353.

⁶ By the term *reconstructed figures* (*Constructionsbilder*) is meant that these profile figures have been reconstructed from sections.

⁷ See Appendix, note 355.

⁸ See note 5 to p. 760.

² See Appendix, note 355.

³ See Appendix, note 357.

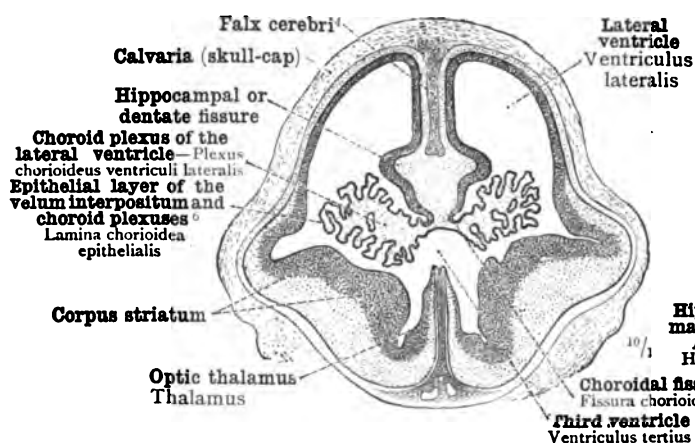


FIG. 1168.—CORONAL SECTION THROUGH THE HEAD, PASSING BETWEEN THE FRONTAL AND PARIETAL LOBES OF THE BRAIN; FROM A HUMAN EMBRYO EIGHT WEEKS OLD.

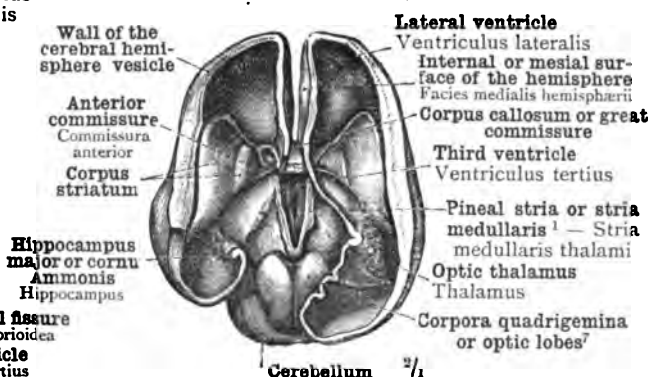


FIG. 1169.—THE INTERIOR OF THE CEREBRAL HEMISPHERE VESICLES OF A HUMAN EMBRYO AT THE END OF THE FOURTH MONTH (MONTHS OF FOUR WEEKS EACH), HAVING A BODY-LENGTH OF 11·8 CENTIMETRES (4·65 INCHES). SEEN FROM ABOVE.

The cerebral hemisphere vesicles were opened by the removal of their convex summits.

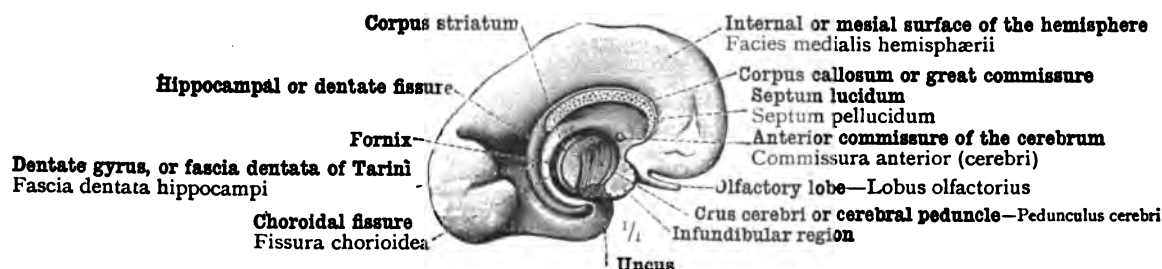


FIG. 1170.—LEFT CEREBRAL HEMISPHERE OF A HUMAN FŒTUS IN THE MIDDLE OF THE SIXTH MONTH (MONTHS OF FOUR WEEKS EACH), HAVING A BODY-LENGTH OF 25 CENTIMETRES (9·84 INCHES). SEEN FROM THE INNER SIDE.

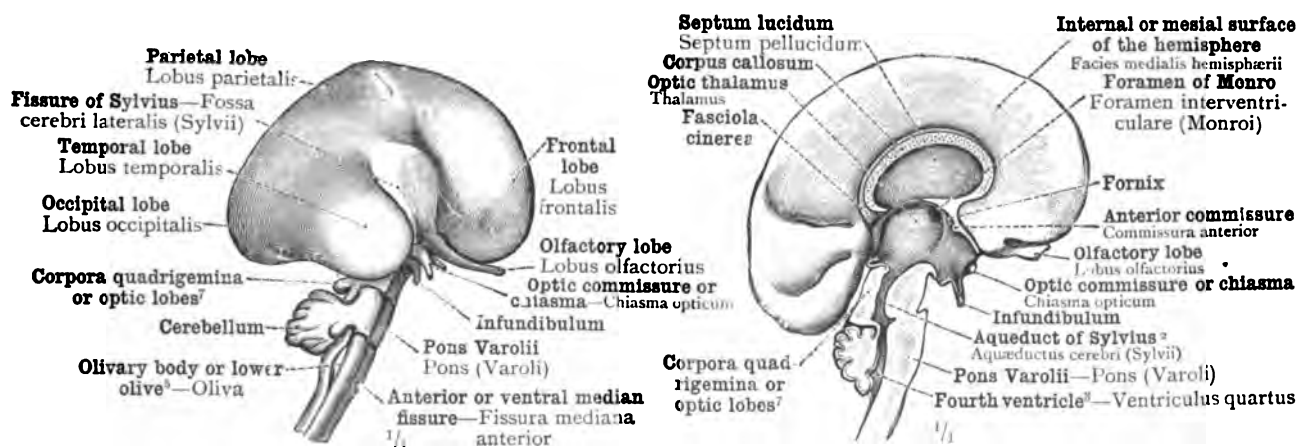


FIG. 1171.—BRAIN OF A HUMAN FŒTUS IN THE MIDDLE OF THE SIXTH MONTH (MONTHS OF FOUR WEEKS EACH), HAVING A BODY-LENGTH OF 25 CENTIMETRES (9·84 INCHES). THE OUTER OR CONVEX SURFACE OF THE RIGHT HEMISPHERE.

FIG. 1172.—MEDIAN SAGITTAL SECTION THROUGH THE BRAIN OF A HUMAN FŒTUS IN THE END OF THE SIXTH MONTH (MONTHS OF FOUR WEEKS EACH), HAVING A BODY-LENGTH OF 29 CENTIMETRES (11·42 INCHES). INNER OR MESIAL SURFACE OF THE LEFT HEMISPHERE.

¹ See Appendix, note 359.

⁴ Sometimes distinguished by the name of *falx minor* or *falx cerebelli*.

⁵ See Appendix, note 377.

² Or *iter a tertio ad quartum ventriculum*.

⁶ See note 9 to p. 767.

⁷ See note 5 to p. 760.

³ See Appendix, note 355.

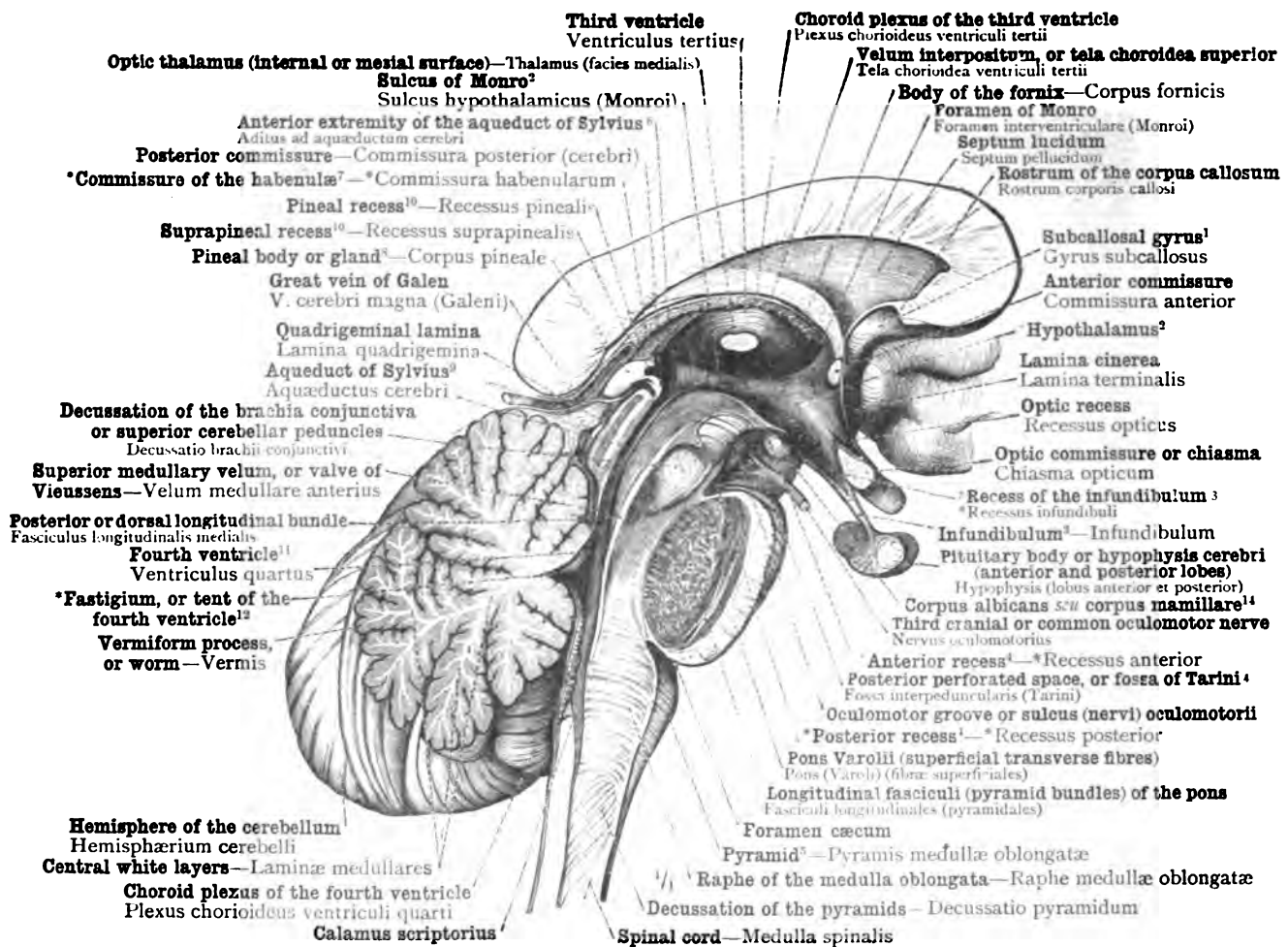


FIG. 1173.—PART OF A MEDIAN SAGITTAL SECTION THROUGH THE BRAIN. LEFT HALF. THE CONSTITUENTS OF THE *RHOMBENCEPHALON (see Appendix, note ³³⁵): THE MEDULLA OBLONGATA, THE PONS VAROLII, AND THE CEREBELLUM. THE CONSTITUENTS OF THE MESENCEPHALON OR MID-BRAIN: THE QUADRIGEMINAL BODIES OR OPTIC LOBES (CORPORA QUADRIGEMINA—see note ⁵ to p. 760), AND THE CEREBRAL PEDUNCLES OR CRURA CEREBRI (PEDUNCULI CEREBRI). THE CONSTITUENTS OF THE THALAMENCEPHALON OR INTERBRAIN (*DIENCEPHALON—see Appendix, note ³³¹): THE OPTIC THALAMI AND THE HYPOTHALAMI¹ WITH THE PITUITARY BODY, OR HYPOPHYSIS CEREBRI, AND THE PINEAL BODY OR GLAND, OR EPIPHYSIS CEREBRI—THE LAST-NAMED BEING COVERED BY THE CORPUS CALLOSUM OR GREAT COMMISSURE AND BY THE FORNIX. THE THIRD AND FOURTH VENTRICLES (VENTRICULI TERTIUS ET QUARTUS), CONNECTED BY THE AQUEDUCT OF SYLVIVS OR ITER A TERTIO AD QUARTUM VENTRICULUM (AQUEDUCTUS CEREBRI), AND CLOSED IN BY THE CHOROID PLEXUSES OF THE THIRD AND FOURTH VENTRICLES RESPECTIVELY (PLEXUS CHORIOIDEI VENTRICULI TERTII ET QUARTI). THE COMMISSURES OF THE CEREBRUM,¹³ ANTERIOR AND POSTERIOR (COMMISSURA ANTERIOR ET COMMISSURA POSTERIOR CEREBRI), ARE CUT ACROSS IN THE MEDIAN PLANE. ON THE INTERNAL OR MESIAL SURFACE OF THE OPTIC THALAMUS THE MIDDLE OR SOFT COMMISSURE (MASSA INTERMEDIA) IS ALSO SEEN IN MEDIAN SAGITTAL SECTION. IN THE POSTERIOR PERFORATED SPACE OR FOSSA OF TARINI (FOSSA INTERPEDUNCULARIS TARINI) WE SEE THE *ANTERIOR RECESS (*RECESSUS ANTERIOR) BEHIND THE CORPUS ALBICANS SEU MAMILLARE, AND THE *POSTERIOR RECESS (*RECESSUS POSTERIOR) ABOVE THE UPPER MARGIN OF THE PONS VAROLII (see Appendix, note ³³²). IN THE SECTION OF THE CEREBELLUM WE SEE THE LAYERS OF WHITE SUBSTANCE (LAMINAE MEDULLARES) RAMIFYING OUTWARDS FROM THE WHITE CENTRE, AND SURROUNDED BY THE GREY CORTICAL SUBSTANCE (SUBSTANTIA CORTICALIS CEREBELLI); TO THE ARBORESCENT APPEARANCE THUS PRODUCED THE NAME OF ARBOR VITAE CEREBELLI IS GIVEN.

¹ Or the "so-called peduncle of the corpus callosum" (Quain)—"formerly known as *pedunculus corporis callosi*" (Von Langer and Todd).

² See Appendix, note ³⁵².

³ See Appendix, note ³⁵¹.

⁴ See Appendix, note ³⁵³.

⁵ See Appendix, note ³⁵⁴.

⁶ See Appendix, note ³⁵⁵.

⁷ *Commissure of the Habenulae*.—Macalister calls this the *transverse foramen of the pineal body*; according to Quain, it is the middle of the upper or dorsal portion of the *pedunculus conarii* or *habenulae*. See detailed explanation in Appendix, note ³⁵⁵.

⁸ Also known as the *conarium*, and as the *epiphysis cerebri*. See Appendix, note ³⁵⁶.

⁹ Or *iter a tertio ad quartum ventriculum*.

¹⁰ See Appendix, note ³⁵⁷.

¹¹ See Appendix, note ³⁵⁸.

¹² See Appendix, note ³⁵⁹.

¹³ In the original German, the anterior and posterior commissures are spoken of as the *commissures of the third ventricle*.

¹⁴ Also known as the *bulb of the fornix*.

*Rhombencephalon, Mesencephalon, and Thalamencephalon.

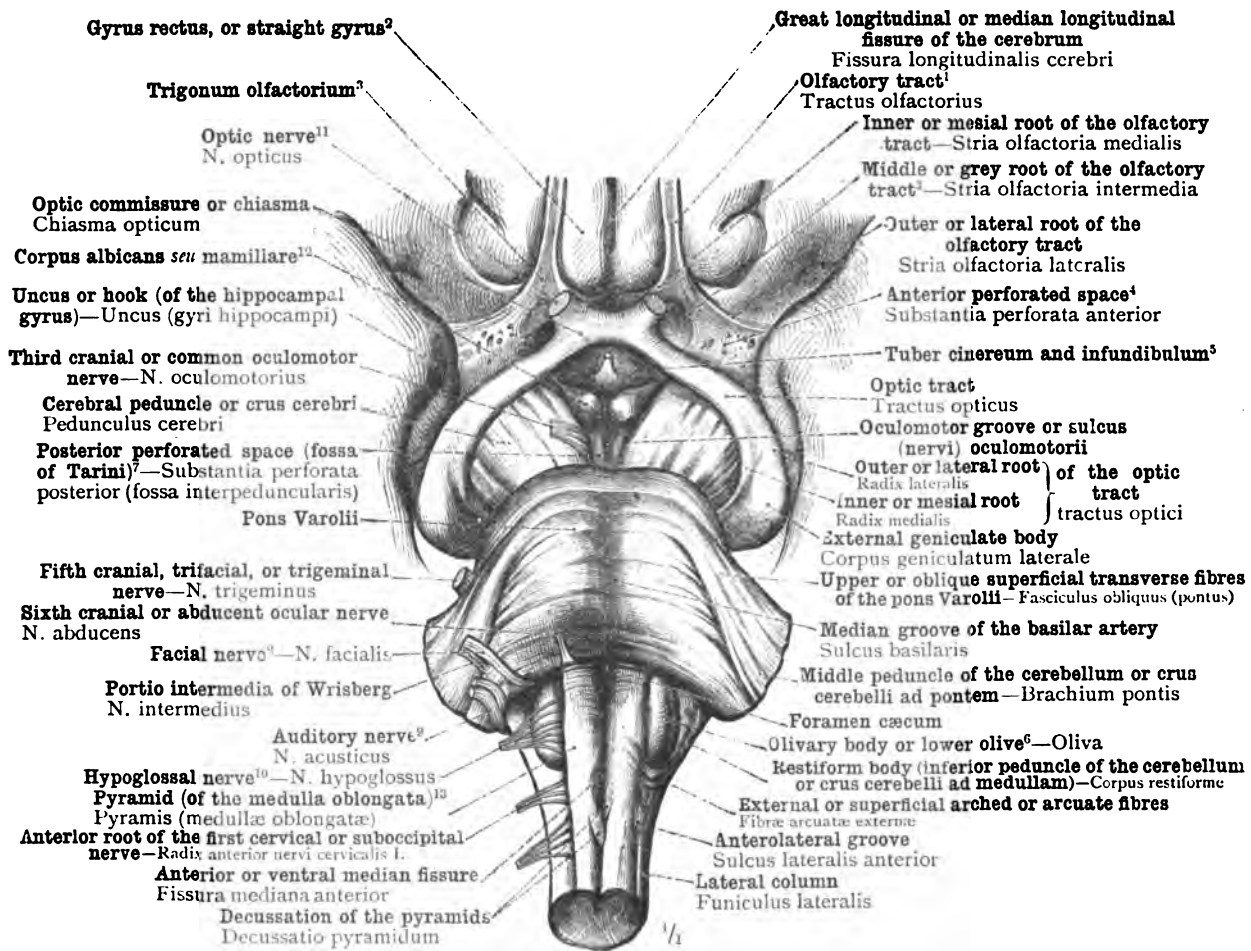


FIG. 1174.—THE MEDULLA OBLONGATA WITH THE PONS VAROLII, THE CEREBRAL PEDUNCLES OR CRURA CEREBRI (PEDUNCULI CEREBRI), AND THE ADJOINING PARTS AT THE FLOOR OF THE INTERBRAIN, SEEN FROM THE BASAL SURFACE.

The two temporal lobes of the cerebrum were drawn far apart, in order that the optic tract (which is partially covered by the inner margin of the temporal lobe—*i.e.*, by the hippocampal gyrus and its uncus), and the relation of this tract to the external geniculate body, might be fully displayed. Between the crura cerebri, diverging as they pass forwards from the pons Varolii, is the fossa of Tarini (fossa interpeduncularis), the floor of which is formed by the posterior perforated lamina or plate (*see note 7 below*); the outer boundary of the posterior perforated space is the oculomotor groove (sulcus nervi oculomotorii, in which the root bundles of the third cranial or common oculomotor nerve emerge from the brain. On the right side these root fibres have been preserved, but on the left they have been removed. By the separation of the two temporal lobes, the anterior perforated space (substantia perforata anterior—*see note 4 below*) has been exposed on either side, and its delimitation anteriorly by the trigonum olfactorium and posteriorly by the optic tract has been displayed. The cerebellum has been cut away on either side along the line of entry of its middle peduncles, the crura cerebelli ad pontem (brachia pontis).

¹ Sometimes erroneously spoken of as the *olfactory nerve*.

² See Appendix, note 367.

³ See Appendix, note 368.

⁴ The grey matter forming the floor of the *anterior perforated space* is distinguished by the name of the *anterior perforated plate* or *lamina*. See also Appendix, note 362.

⁵ See Appendix, note 361.

⁶ See Appendix, note 327.

⁷ The grey matter forming the floor of the *posterior perforated space* is distinguished by the name of the *posterior perforated plate* or *lamina*.

⁸ *Seventh cranial nerve* in Soemmerring's enumeration, *portio dura* of the *seventh* in that of Willis.

⁹ *Eighth cranial nerve* in Soemmerring's enumeration, *portio mollis* of the *seventh* in that of Willis.

¹⁰ *Twelfth cranial nerve* in Soemmerring's enumeration, *ninth cranial nerve* in that of Willis; also known as the *lingual motor nerve*.

¹¹ Or *second cranial nerve*.

¹² Also known as the *bulb of the fornix*.

¹³ See Appendix, note 33.

*Rhombencephalon, Mesencephalon, and Thalamencephalon.

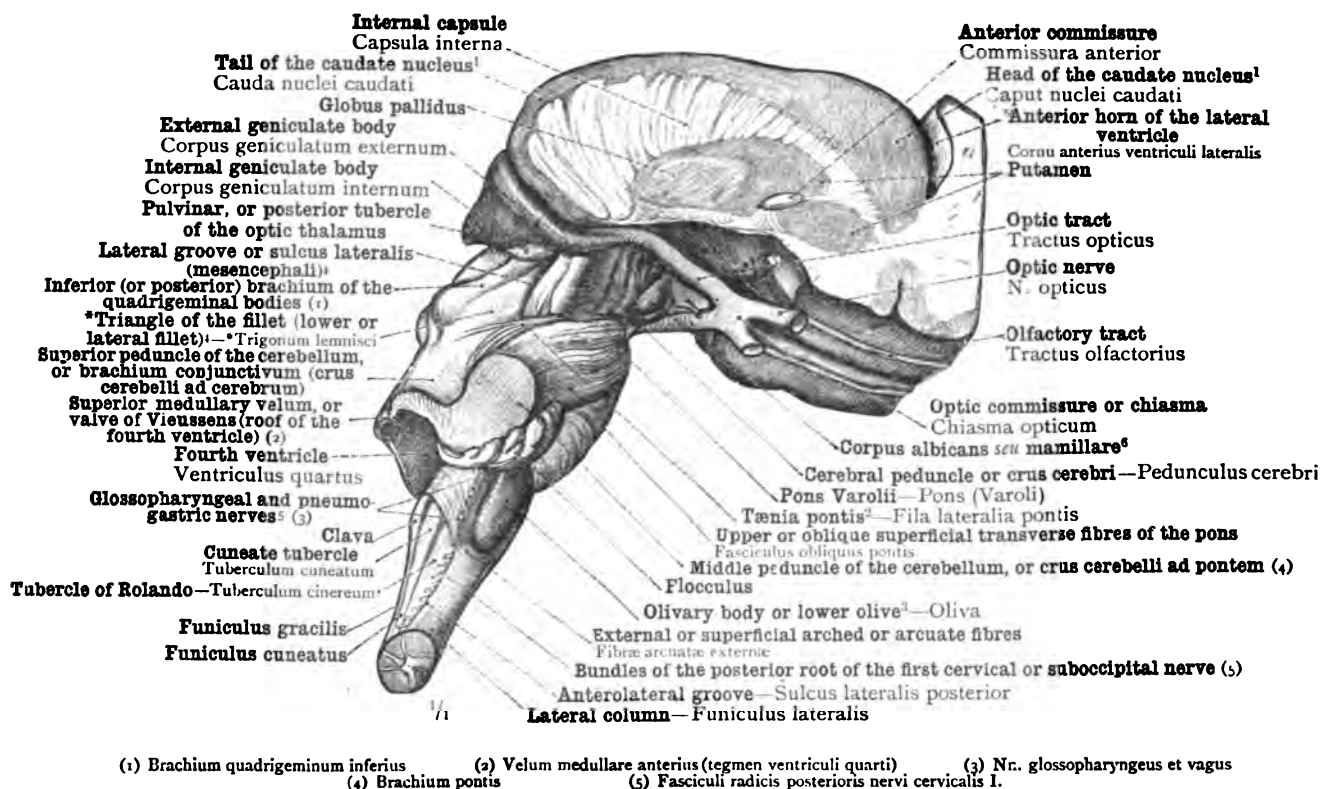


FIG. 1175.—THE MEDULLA OBLONGATA, WITH THE PONS VAROLII; THE CEREBRAL PEDUNCLES OR CRURA CEREBRI (PEDUNCULI CEREBRI), WITH THE ADJOINING *TRIANGLE OF THE FILLET (*TRIGONUM LEMNISCII—see Appendix, note ³⁰⁰); THE QUADRIGEMINAL BODIES, CORPORA QUADRIGEMINA; THE PULVINAR, OR POSTERIOR TUBERCLE OF THE OPTIC THALAMUS; THE EXTERNAL AND INTERNAL GENICULATE BODIES, CORPUS GENICULATUM EXTERNUM ET CORPUS GENICULATUM INTERNUM; THE OPTIC TRACT (TRACTUS OPTICUS). SEEN FROM THE RIGHT SIDE.

The superior peduncle of the cerebellum, brachium conjunctivum, or crus cerebelli ad cerebrum, and the middle peduncle of the cerebellum, or crus cerebelli ad pontem (brachium pontis), were cut across at their junction with the cerebellum, of which last everything but the flocculus has been cut away. The preparation was separated from the right cerebral hemisphere by a section very nearly sagittal, passing through the caudate nucleus. The two parts of this nucleus, the head (caput) and the tail (cauda), are thus shown in sagittal section; by these the fibres (divided almost transversely) of the internal capsule (capsula interna, pedunculus coronæ radiatæ) are embraced above and behind; below the internal capsule are the globus pallidus and the putamen of the lenticular nucleus, and also the anterior commissure in transverse section.

¹ *Corpus Striatum*.—In England the *corpus striatum* is regarded as containing two nuclei, the *caudate nucleus* and the *lenticular nucleus*, quite frequently spoken of by their Latin names as *nucleus caudatus* and *nucleus lenticularis*, and sometimes also distinguished as the *intraventricular portion* (or *nucleus*) and *extraventricular portion* (or *nucleus*) of the *corpus striatum*. The corpora striata themselves are sometimes spoken of as the *ganglia of the cerebral hemispheres*. The anterior, larger extremity of the caudate nucleus is called the *head* or *caput*; the posterior, smaller extremity, the *tail* or *cauda*. Von Langer and Toldt regard the *lenticular nucleus* (*nucleus lentiformis*) as an independent mass of grey matter, not forming part of the *corpus striatum*. This latter, as it appears in the outer wall of the anterior horn of the lateral ventricle, the German authors divide into two portions: an anterior, "*caput corporis striati*," and a posterior, "*cauda corporis striati*" (Fig. 1176, p. 767); but the corresponding English terms "*head*" and "*tail of the corpus striatum*" are not used by Quain. The *nucleus caudatus* is "the grey matter of the *corpus striatum*," and the names of the subdivisions of this nucleus, *caput nuclei caudati* and *cauda nuclei caudati* are applied by the German authors exactly as they are applied in England.

² *Tænia Pontis*.—Von Langer and Toldt describe in the following terms the fibres called by them the "*lateral strands of the pons*" (*op. cit.*, p. 615): "Not infrequently, at the upper margin of the pons Varolii, we see one or two slender separate bundles of fibres which run across the peduncles of the cerebrum to join the superior peduncles of the cerebellum; these are called *fila lateralia pontis*." The reference to these fibres in Quain's "*Anatomy*" (vol. iii., part i., p. 115) is very brief: "Some horizontal white striæ usually pass out of the grey matter [of the posterior perforated space] and turn round the peduncles [of the cerebrum] close to the upper border of the pons, entering which they reach eventually the medullary centre of the cerebellum (*tænia pontis*)."

³ See Appendix, note 327.

⁴ See Appendix, note 309.

⁵ The *glossopharyngeal* is the *ninth*, and the *pneumogastric* (or *vagus*) is the *tenth*, cranial nerve in Soemmerring's enumeration. In that of Willis they constitute the *first* and *second* trunks, respectively, of the *eighth* cranial nerve.

⁶ Also known as the *bulb of the fornix*.

*Rhombencephalon, Mesencephalon, and Thalamencephalon.

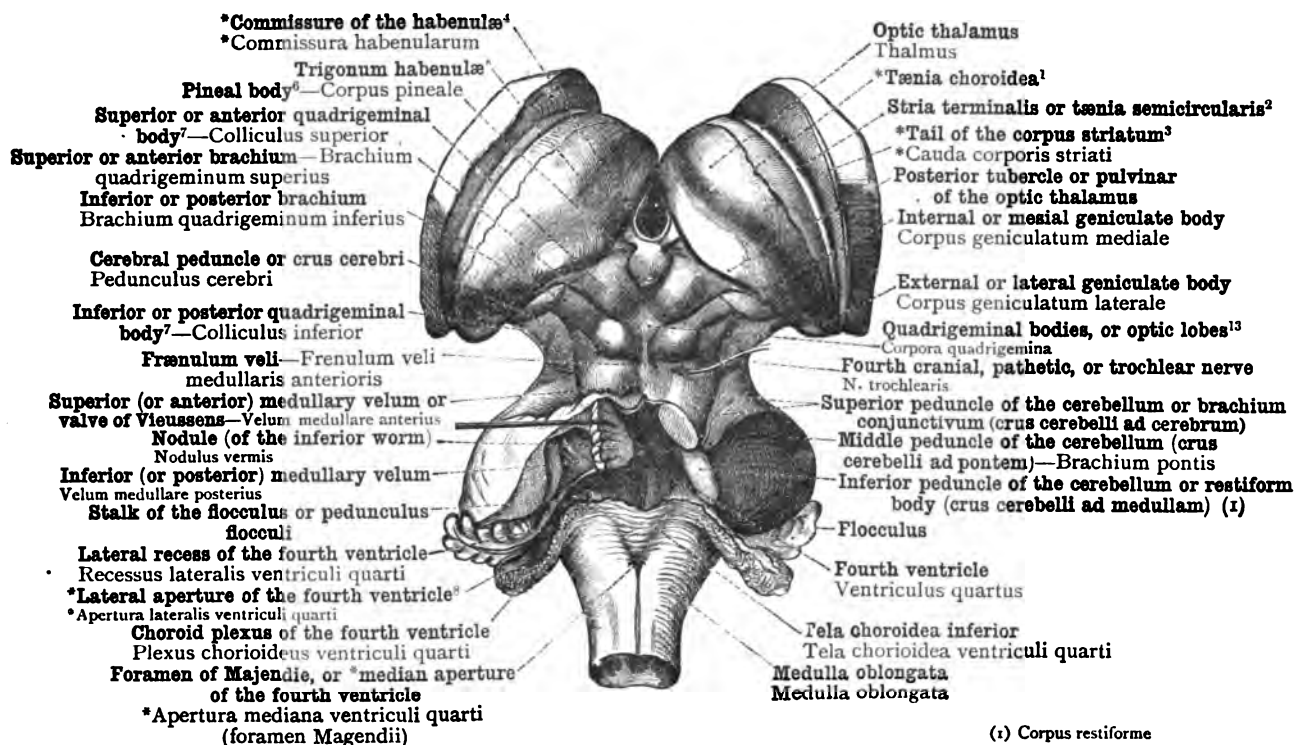


FIG. 1176.—THE MEDULLA OBLONGATA, THE CORPORA QUADRIGEMINA OR OPTIC LOBES WITH THEIR BRACHIA, THE OPTIC THALAMI, AND THE INTERNAL AND EXTERNAL GENICULATE BODIES; SEEN FROM THE DORSAL SIDE.

The tela chorioidea inferior (tela chorioidea ventriculi quarti), forming the roof of the lower part of the fourth ventricle, has been preserved; on either side, however, the outer part of the choroid plexuses of the fourth ventricle has been separated from the stalk of the flocculus or pedunculus flocculi (the outer thickened part of the lower free edge of the inferior, or posterior, medullary velum), and the lateral recesses of the fourth ventricle have thus been opened from behind. The upper part of the fourth ventricle has been opened by a median sagittal section through the worm of the cerebellum and part of the superior, or anterior, medullary velum or valve of Vieussens. The greater part of the cerebellum has been removed; the left half only of the nodulus with the flocculus and its stalk and the inferior, or posterior, medullary velum being retained.

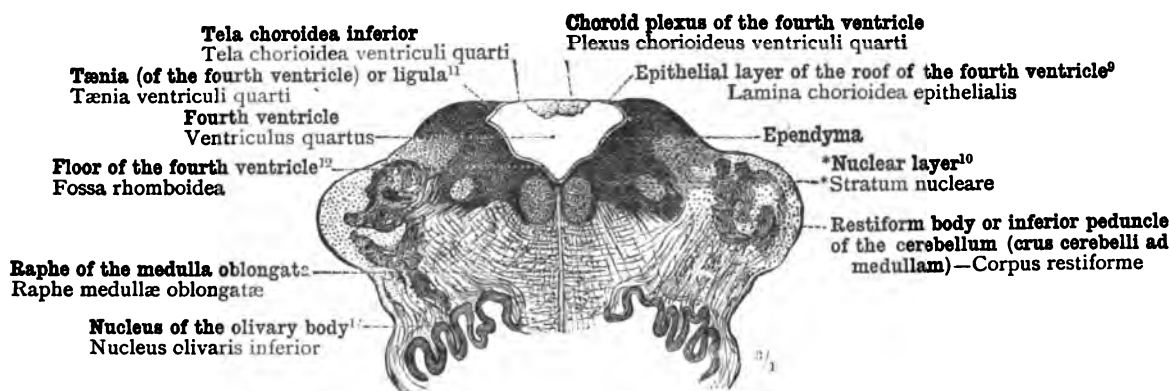


FIG. 1177.—THE LOWER PART OF THE FOURTH VENTRICLE, VENTRICULUS QUARTUS, IN CORONAL SECTION (SEMIDIAGRAMMATIC).

- ¹ See Appendix, note 370.
² See note ¹ to p. 784.
³ *i.e.*, surface of the tail of the caudate nucleus as it appears in the wall of the lateral ventricle. See note ¹ to p. 766.
⁴ See Appendix, note 371.
⁵ See Appendix, note 365.
⁶ Known also as the *pineal gland*, the *comarium*, and the *epiphysis cerebri*. See Appendix, note 365.
⁷ See Appendix, note 372.
⁸ See Appendix, note 373.
⁹ See Appendix, note 374.
¹⁰ See Appendix, note 375.
¹¹ See note ¹ to p. 784.
¹² See Appendix, note 385.
¹³ See note 5 to p. 760.

*Rhombencephalon, Mesencephalon, and Thalamencephalon.

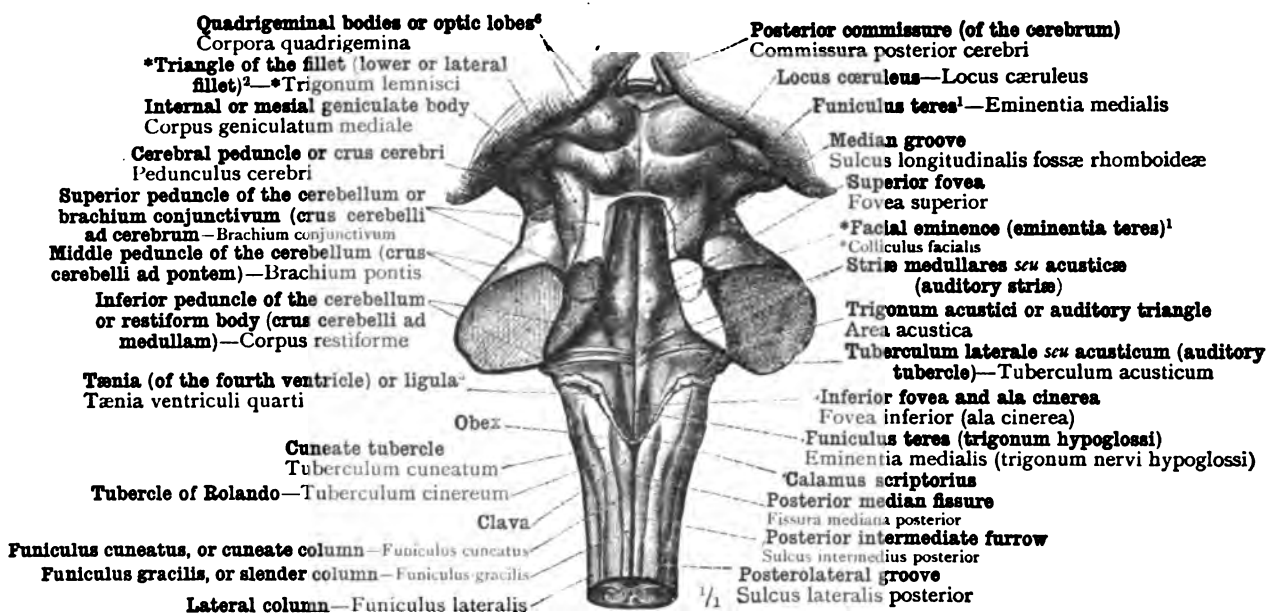


FIG. 1178.—THE FLOOR OF THE FOURTH VENTRICLE (FOSSA RHOMBOIDEA—see Appendix, note ³⁵⁵), DISPLAYED BY THE REMOVAL OF THE POSTERIOR WALL (ROOF) OF THE VENTRICLE AND ALSO OF THE CEREBELLUM. THE VENTRICLE IS SEEN TO BE BOUNDED Laterally BY THE RESTIFORM BODIES BELOW, AND BY THE SUPERIOR PEDUNCLES OF THE CEREBELLUM ABOVE; AND THE CONTINUITY OF ITS WALLS WITH THE SUBSTANCE OF THE MID-BRAIN IS MANIFEST.

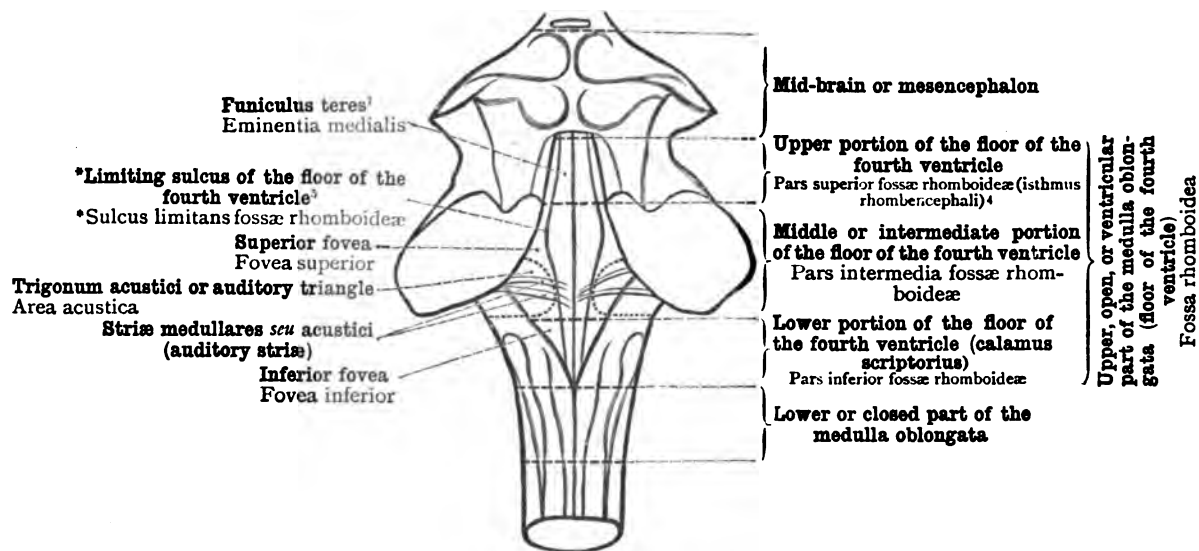


FIG. 1179.—SUBDIVISIONS OF THE MEDULLA OBLONGATA AND THE FLOOR OF THE FOURTH VENTRICLE (DIAGRAMMATIC).

¹ See Appendix, note ³⁷⁶.
⁴ See Appendix, note ³⁶⁹.

² See Appendix, note ³⁶⁹.
⁵ See Appendix, note ³⁷⁷.

³ See note ¹ to p. 784.
⁶ See note ⁵ to p. 760.

*Rhombencephalon and Mesencephalon.

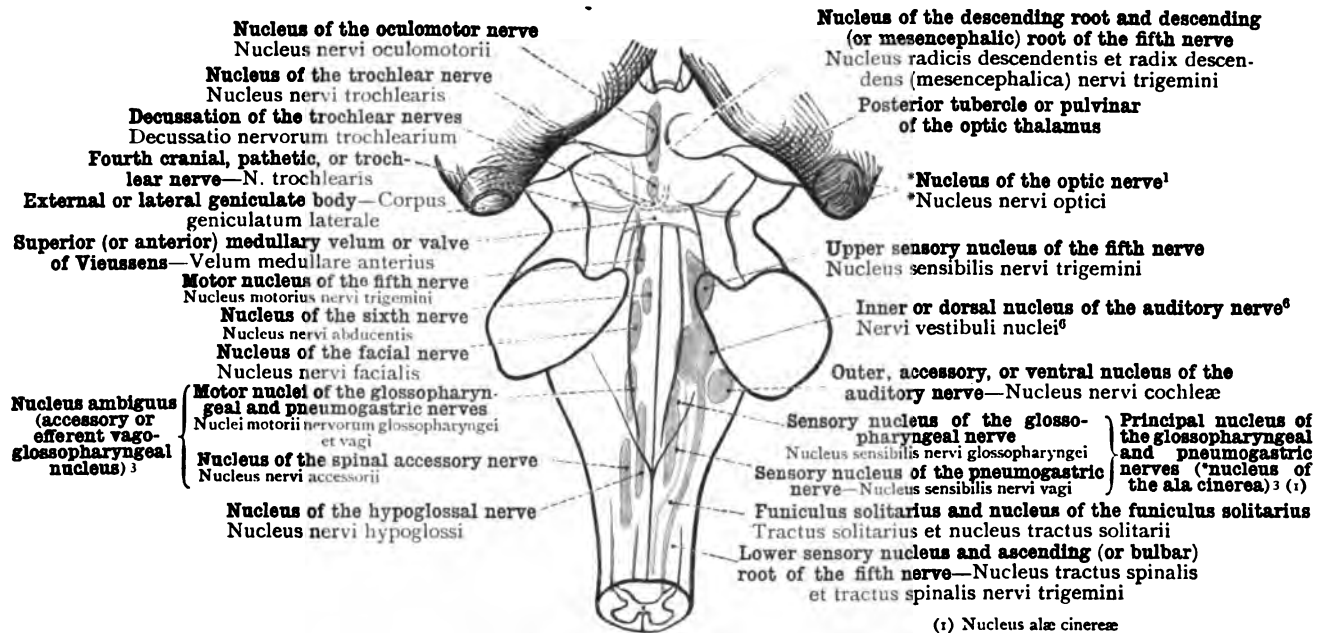
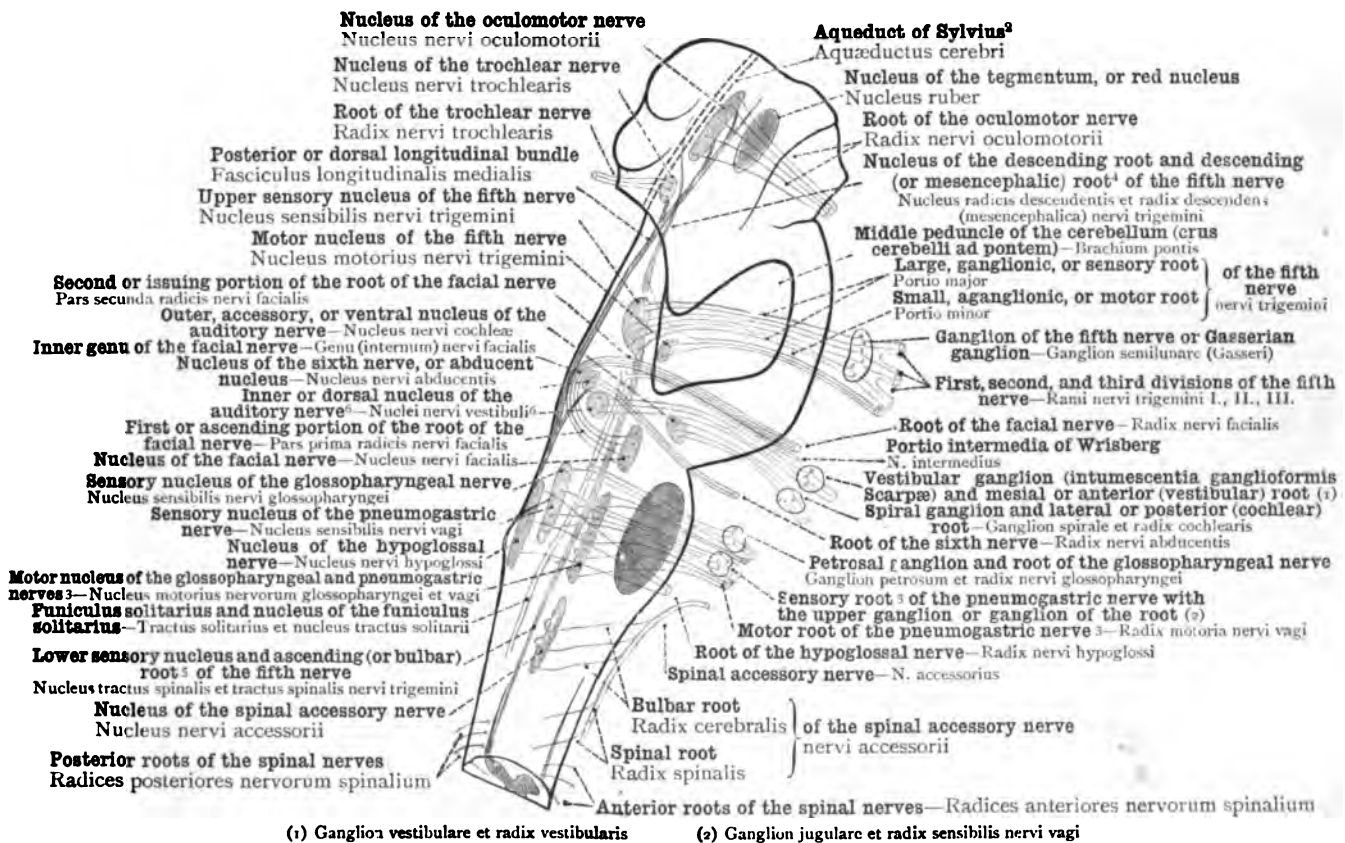


FIG. 1180.—THE NUCLEI OF ORIGIN OF THE CRANIAL NERVES, NUCLEI ORIGINIS NERVORUM CEREBRALIUM, IN THE *RHOMBENCEPHALON AND MESENCEPHALON; SEEN FROM BEHIND, IN DIAGRAMMATIC PROJECTION.

The efferent or motor nuclei are represented on the left side only, and are coloured red; the afferent or sensory nuclei are represented on the right side only and are coloured blue.



(1) Ganglion vestibulare et radix vestibularis

(2) Ganglion jugulare et radix sensibilis nervi vagi

FIG. 1181.—THE NUCLEI OF ORIGIN OF THE CRANIAL NERVES, NUCLEI ORIGINIS NERVORUM CEREBRALIUM, IN THE *RHOMBENCEPHALON AND MESENCEPHALON; SEEN FROM THE SIDE IN DIAGRAMMATIC PROJECTION.

The efferent or motor nuclei and roots are coloured red; the afferent or sensory nuclei and roots are coloured blue.

¹ See Appendix, note 378.

² Or iter a tertio ad quartum ventriculum.

³ See Appendix, note 379.

⁴ Called by Gowers the upper root.

⁵ Called by Gowers the lower root.

⁶ *Nuclei Nervi Vestibuli*.—The author uses the term *nuclei* in the plural because, according to his view, "the vestibular root of the auditory nerve passes chiefly to the nucleus of Deiters, but in part also to the dorsal nucleus" (Von Langer and Toldt, *op. cit.*, p. 649). According to Quain, on the other hand, most of the fibres of the vestibular root pass to the dorsal nucleus, and the connexion of this root with the nucleus of Deiters is doubtful.

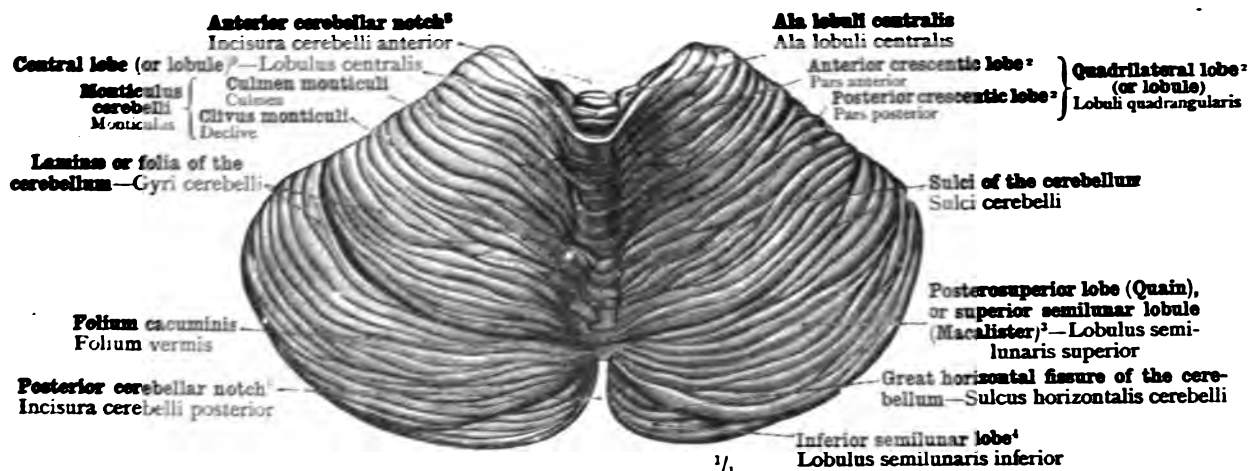


FIG. 1182.—THE CEREBELLUM, SEPARATED FROM ITS ATTACHMENTS. UPPER SURFACE, FACIES SUPERIOR. THE SUBDIVISION OF THE UPPER WORM OR SUPERIOR VERMIFORM PROCESS (VERMIS SUPERIOR) INTO THE CENTRAL LOBE OR LOBULE (LOBULUS CENTRALIS), THE MONTICULUS—CONSISTING OF AN ANTERIOR PART OR CULMEN AND A POSTERIOR PART OR CLIVUS (DECLIVE)—AND THE FOLIUM CACUMINIS (FOLIUM VERMIS). THE SUBDIVISION OF THE HEMISPHERES (HEMISPHERIA CEREBELLI) INTO THE ALA LOBULI CENTRALIS, THE QUADRILATERAL LOBE (LOBULUS QUADRANGULARIS²), AND THE POSTEROSUPERIOR LOBE OR SUPERIOR SEMILUNAR LOBULE (LOBULUS SEMILUNARIS SUPERIOR³).¹

Regarding the nomenclature of the parts of the cerebellum in general, see Appendix, note ³⁰.

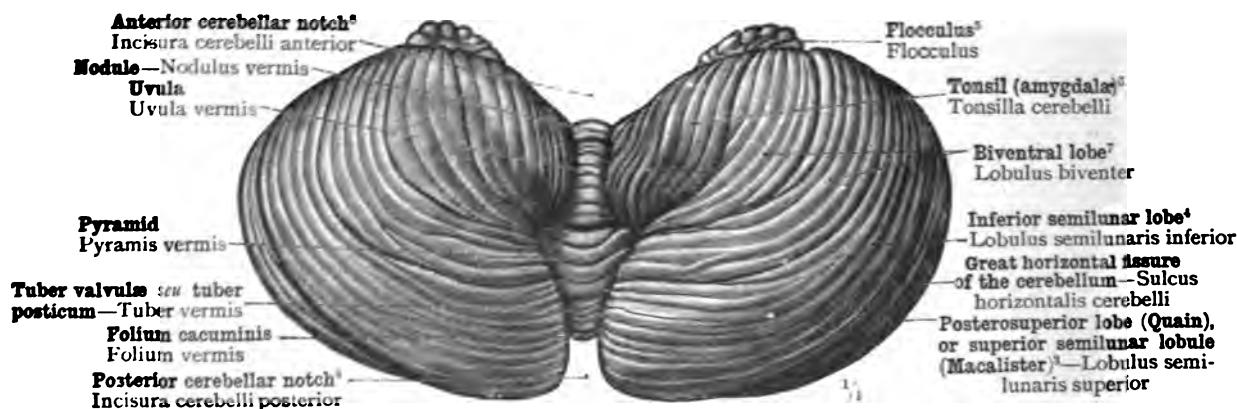


FIG. 1183.—THE INFERIOR SURFACE OF THE CEREBELLUM, FACIES INFERIOR CEREBELLI. THE SUBDIVISION OF THE LOWER WORM OR INFERIOR VERMIFORM PROCESS (VERMIS INFERIOR) INTO THE TUBER VALVULÆ SEU TUBER POSTICUM (TUBER VERMIS), THE PYRAMID (PYRAMIS VERMIS), THE UVULA (UVULA VERMIS), AND THE NODULE (NODULUS VERMIS). THE SUBDIVISION OF THE HEMISPHERES (HEMISPHERIA CEREBELLI) INTO THE INFERIOR SEMILUNAR LOBE OR MARGINAL LOBULE (LOBULUS SEMILUNARIS INFERIOR⁴), THE BIVENTRAL LOBE OR CUNEIFORM OR DIGASTRIC LOBULE (LOBULUS BIVENTER), THE TONSIL OR AMYGDALA (TONSILLA CEREBELLI⁶), AND THE FLOCCULUS OR SUBPEDUNCULAR LOBE (FLOCCULUS).¹

¹ See Appendix, note ³⁰.

² See Appendix, note ³¹.

³ Ellis (*op. cit.*) calls this the *posterior lobe* (of the upper surface).

⁴ Called by Macalister the *marginal lobule*, and by Ellis the *posterior lobe* (of the under surface). See also Appendix, note ³⁰.

⁵ Ellis gives *subpeduncular lobe* as an alternative name for the *flocculus*.

⁶ The *tonsil* or *amygdala* of the cerebellum is by Macalister called the *tonsillitic lobe*, and by Ellis the *amygdaloid lobe*.

⁷ By Macalister called the *cuneiform* or *digastric lobule*. See also Appendix, note ³⁰.

⁸ *Cerebellar Notches*.—Alternative names for these are given by Quain—viz., for the *posterior notch*, *incisura marsupialis*; and for the *anterior notch*, *incisura semilunaris*.

⁹ See Appendix, note ³⁰.

The Cerebellum.

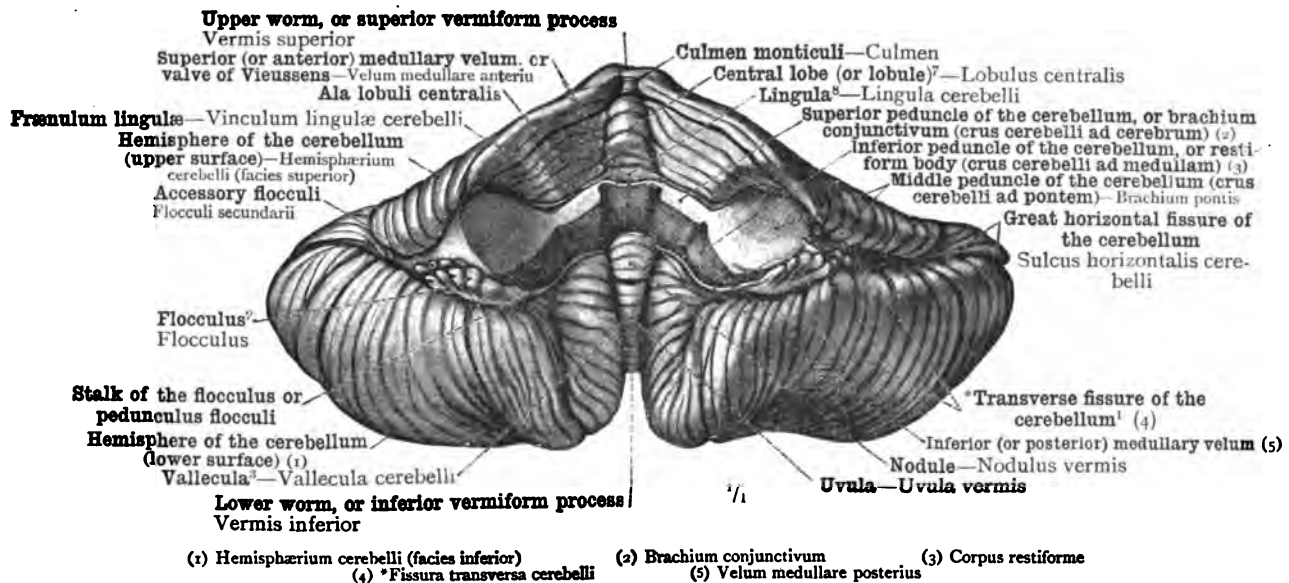


FIG. 1184.—THE CEREBELLUM, SEPARATED FROM ITS ATTACHMENTS, SEEN FROM BEFORE. THE ENTRANCE OF THE THREE PAIRS OF CEREBELLAR PEDUNCLES (VIZ., THE MIDDLE PEDUNCLES, BRACHIA PONTIS, THE INFERIOR PEDUNCLES, CORPORA RESTIFORMIA, AND THE SUPERIOR PEDUNCLES, BRACHIA CONJUNCTIVA, WITH THE SUPERIOR MEDULLARY VELUM OR VALVE OF VIEUSSENS) INTO THE MEDULLARY CENTRE OF THE CEREBELLUM THROUGH THE *TRANSVERSE FISSURE OF THE CEREBELLUM, *FISSURA TRANSVERSA CEREBELLI (i.e., THE ANTERIOR PART OF THE GREAT HORIZONTAL FISSURE¹). THE LINGULA OF THE UPPER WORM, LINGULA CEREBELLI, WITH ITS LATERAL EXTENSIONS, FRÆNULA LINGULÆ (VINCULA LINGULÆ CEREBELLI).

Regarding the nomenclature of the parts of the cerebellum, see Appendix, note ³⁹⁰.

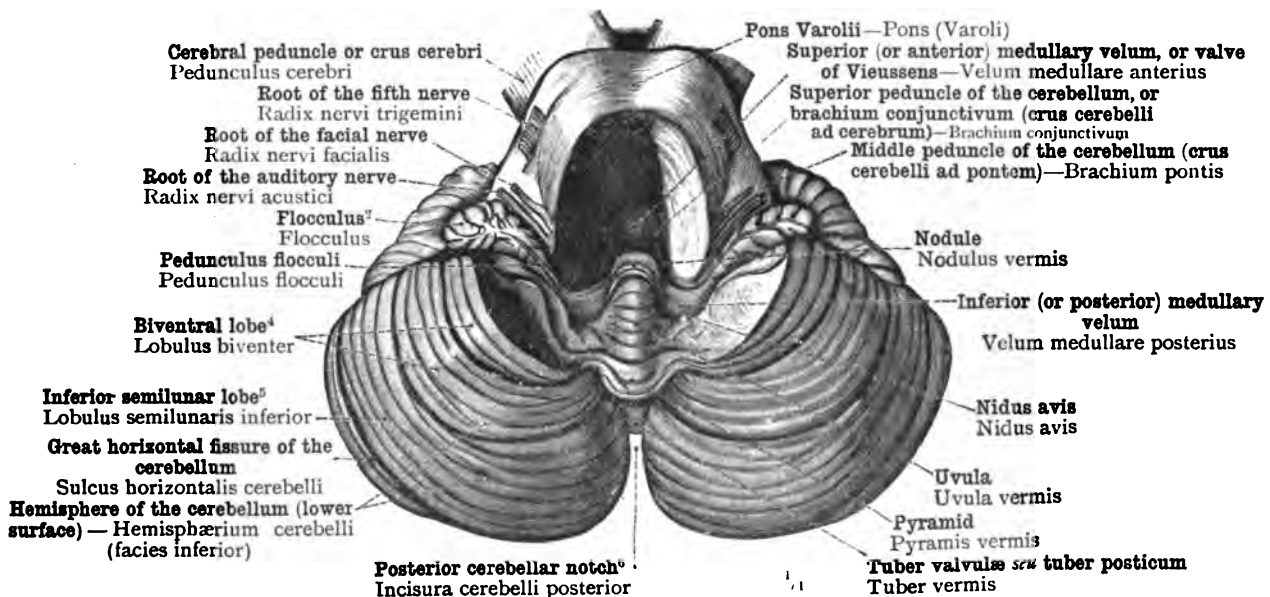


FIG. 1185.—THE LOWER SURFACE OF THE CEREBELLUM WITH THE PONS VAROLII. BY THE REMOVAL OF A PORTION OF THE LATTER, THE LOWER SURFACE OF THE SUPERIOR (OR ANTERIOR) MEDULLARY VELUM OR VALVE OF VIEUSSENS (VELUM MEDULLARE ANTERIUS) HAS BEEN EXPOSED; AND BY SHELLING OUT THE TONSIL (AMYGDALA) THE INFERIOR (OR POSTERIOR) MEDULLARY VELUM (VELUM MEDULLARE POSTERIUS), WITH THE PEDUNCULUS FLOCCULI, HAS BEEN LAID BARE (see Appendix, note ³⁹⁰).

1 See Appendix, note ³⁹³.

2 Or subpeduncular lobe (Elli.).

3 Vallecula.—Macalister makes use of the English equivalent, valley, for this median fossa.

4 By Macalister called the cuneiform or digastric lobule. See also Appendix, note ³⁹⁰.

5 Called by Macalister the marginal lobule, and by Ellis the posterior lobe (of the under surface). See also Appendix, note ³⁹⁰.

6 See note 8 to p. 770.

7 See Appendix, note ³⁹².

8 Or linguetta laminosa (Macalister).

The Cerebellum.

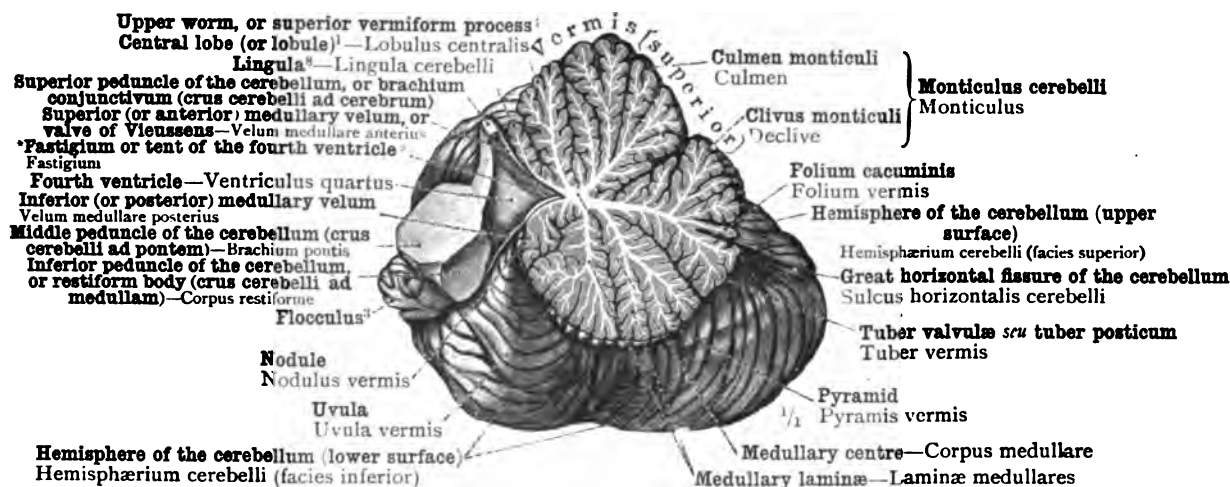


FIG. 1186.—MEDIAN SAGITTAL SECTION THROUGH THE WORM OR VERMIFORM PROCESS (VERMIS) OF THE CEREBELLUM. THE SUBDIVISIONS OF THE UPPER WORM OR SUPERIOR VERMIFORM PROCESS (VERMIS SUPERIOR) AND THE LOWER WORM OR INFERIOR VERMIFORM PROCESS (VERMIS INFERIOR). THE CONTINUITY OF THE SUPERIOR (OR ANTERIOR) MEDULLARY VELUM OR VALVE OF VIEUSSENS WITH THE MEDULLARY CENTRE OF THE WORM. THE TENT-SHAPED PROJECTION (*FASTIGIUM—see Appendix, note ³⁶⁰) IN THE ROOF OF THE FOURTH VENTRICLE.

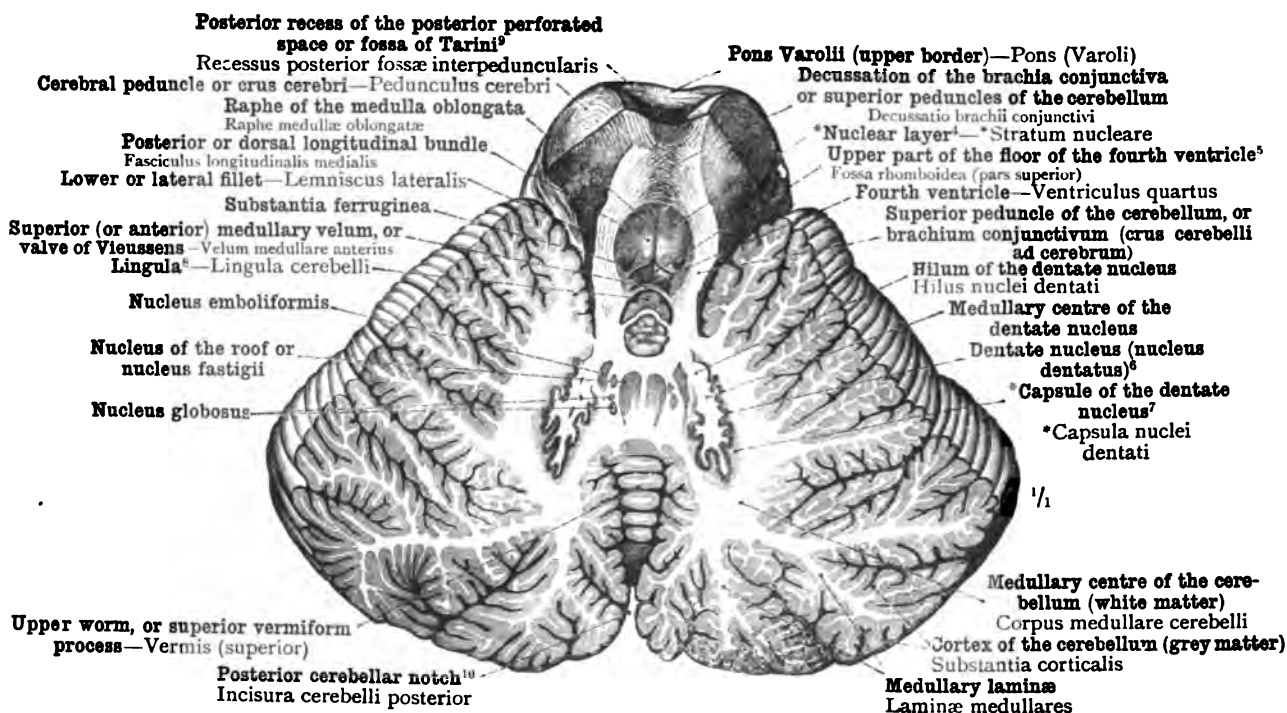


FIG. 1187.—SECTION THROUGH THE CEREBELLUM AND THE PEDUNCLES OF THE CEREBRUM IN THE PLANE OF THE BRACHIA CONJUNCTIVA OR SUPERIOR PEDUNCLES OF THE CEREBELLUM. UPPER SURFACE OF LOWER SPHERES OF THE CEREBELLUM. THE NUCLEI OF THE WHITE MATTER OF THE CEREBELLUM: THE DENTATE NUCLEUS, NUCLEUS DENTATUS (CORPUS DENTATUS, CORPUS CILIARE); THE NUCLEUS EMBOLIFORMIS; THE NUCLEUS GLOBOSUS; AND THE NUCLEUS FASTIGII. THE DECUSSATION OF THE SUPERIOR PEDUNCLES OF THE CEREBELLUM, DECUSSATIO BRACHII CONJUNCTIVI.¹¹

Regarding the nomenclature of the parts of the cerebellum, see Appendix, note ³⁶⁰.

¹ See Appendix, note ³⁶².

⁴ See Appendix, note ³⁷⁵.

⁶ Known also as the *corpus dentatum* or *corpus ciliare*.

⁸ Or *linguetta laminosa* (Macalister).

¹¹ *Decussatio Brachii Conjunctivi*.—Thus in the original. Since, however, a single brachium cannot decussate, the name should be

² See Appendix, note ³⁶⁶.

⁵ See Appendix, note ³⁵⁵.

⁹ See Appendix, note ³⁶².

³ Or *subpeduncular lobe* (Ellis).

⁷ See Appendix, note ³⁸⁴.

¹⁰ See note ⁸ to p. 770.

decussatio brachiorum conjunctivorum.

The Cerebellum.

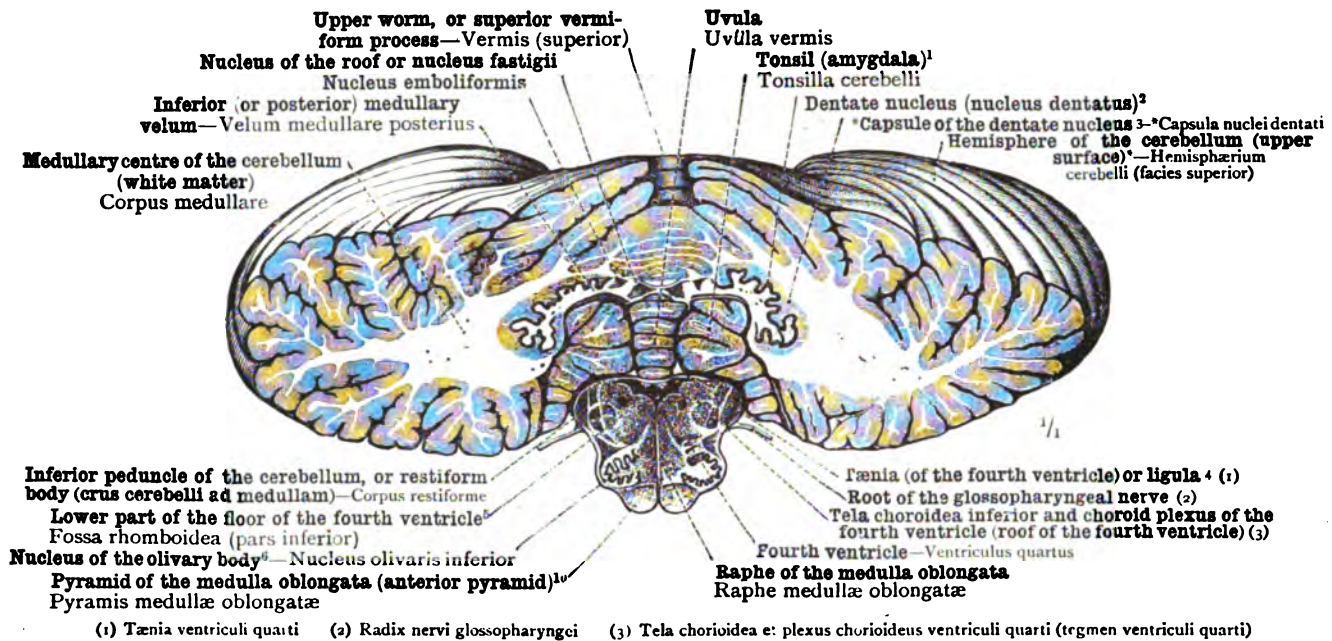


FIG. 1188.—CORONAL SECTION THROUGH THE CEREBELLUM AND THE MEDULLA OBLONGATA IN THE REGION OF THE RESTIFORM BODIES (INFERIOR PEDUNCLES OF THE CEREBELLUM, CRURA CEREBELLI AD MEDULLAM); THE RESPECTIVE RELATIONS OF THE MEDULLA AND THE CEREBELLUM TO THE LOWER PART OF THE FOURTH VENTRICLE. THE NUCLEI OF THE WHITE MATTER OF THE CEREBELLUM.

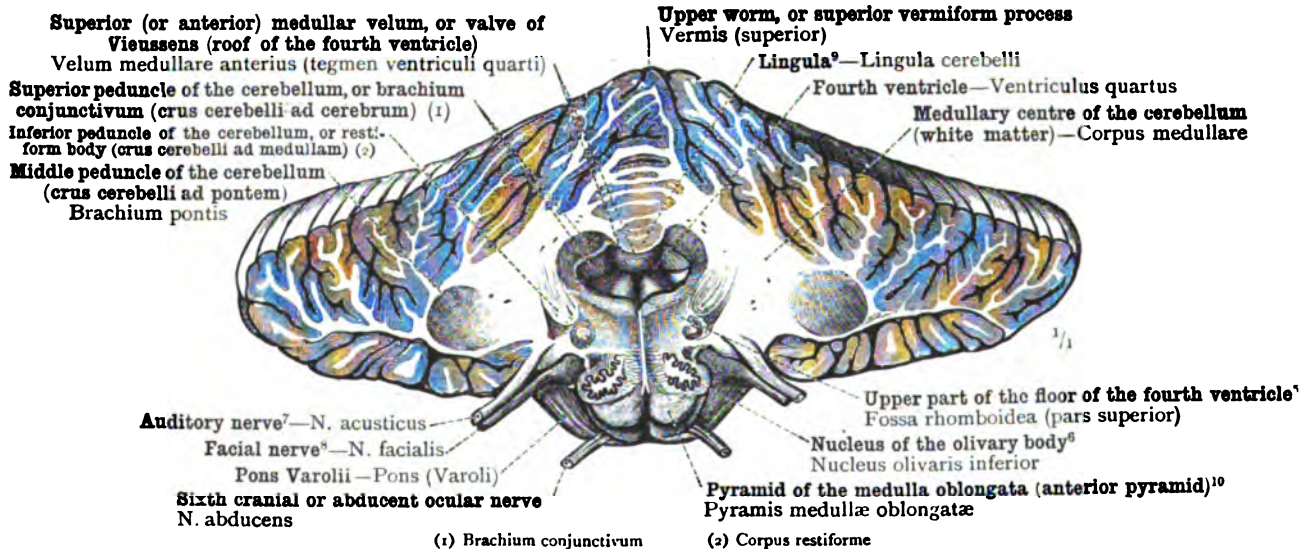


FIG. 1189.—CORONAL SECTION THROUGH THE CEREBELLUM AND THE MEDULLA OBLONGATA IN THE REGION OF THE BRACHIA CONJUNCTIVA OR SUPERIOR PEDUNCLES OF THE CEREBELLUM; THE RESPECTIVE RELATIONS OF THE MEDULLA AND THE CEREBELLUM TO THE UPPER PART OF THE FOURTH VENTRICLE. THE COURSE OF THE PEDUNCLES OF THE CEREBELLUM IN THE MEDULLARY CENTRE OR WHITE MATTER OF THE CEREBELLUM.

¹ The tonsil or amygdala of the cerebellum is by Macalister called the *tonsillitic lobe*, and by Ellis the *amygdaloid lobe*.

² Known also as the *corpus dentatum*, or *corpus ciliare*.

³ See note ¹ to p. 784.

⁴ See note ¹ to p. 784.

⁵ See Appendix, note 355.

⁶ See Appendix, note 355.

⁷ Eighth cranial nerve in Soemmerring's enumeration; *portio mollis* of the seventh cranial nerve in that of Willis.

⁸ Seventh cranial nerve in Soemmerring's enumeration; *portio dura* of the seventh cranial nerve in that of Willis.

⁹ Or *linguetta laminosa* (Macalister).

¹⁰ See Appendix, note 363.

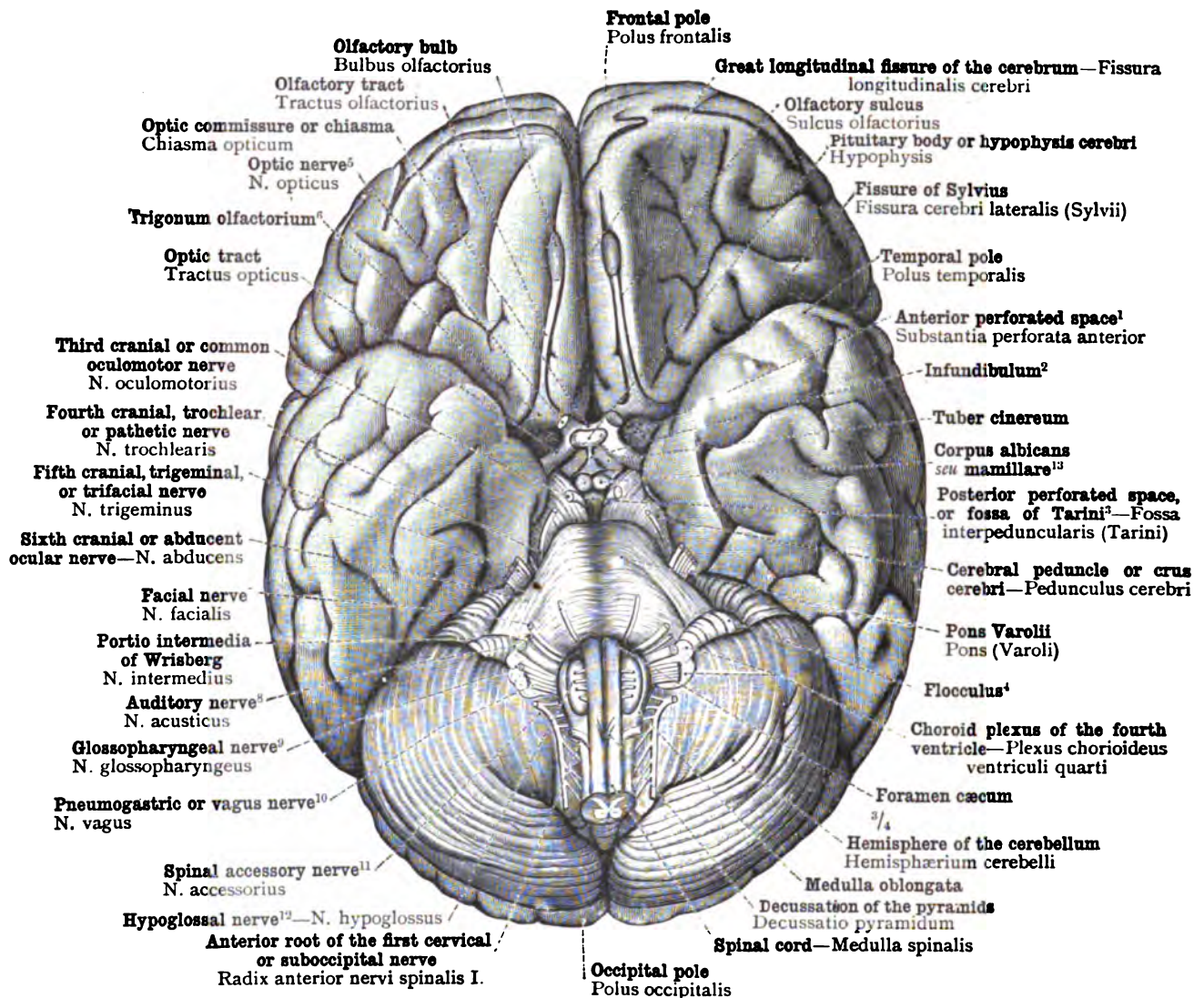


FIG. 1190.—THE INFERIOR SURFACE (BASE) OF THE BRAIN, BASIS ENCEPHALI, WITH THE EMERGING ROOTS OF THE CRANIAL NERVES, RADICES NERVORUM CEREBRALIUM. THE INFERIOR OR BASAL SURFACE OF THE CEREBRUM, FACIES BASALIS CEREBRI, IS CONCEALED BEHIND BY THE CEREBELLUM.

¹ The grey matter forming the floor of the *anterior perforated space* is distinguished by the name of the *anterior perforated plate* or *lamina*.

² See Appendix, note 361.

³ Or *second cranial nerve*.

⁴ See Appendix, note 362.

⁵ See Appendix, note 368.

⁶ Or *subpeduncular lobe* (Ellis).

⁷ *Seventh cranial nerve* in Soemmerring's enumeration; *portio dura* of the *seventh cranial nerve* in that of Willis.

⁸ *Eighth cranial nerve* in Soemmerring's enumeration; *portio mollis* of the *eighth cranial nerve* in that of Willis.

⁹ *Ninth cranial nerve* in Soemmerring's enumeration; *first trunk* of the *eighth cranial nerve* in that of Willis.

¹⁰ *Tenth cranial nerve* in Soemmerring's enumeration; *second trunk* of the *eighth cranial nerve* in that of Willis.

¹¹ *Eleventh cranial nerve* in Soemmerring's enumeration; *third trunk* of the *eighth cranial nerve* in that of Willis.

¹² *Twelfth cranial nerve* in Soemmerring's enumeration, *ninth* in that of Willis; also known as the *lingual motor nerve*.

¹³ Also known as the *bulb of the fornix*.

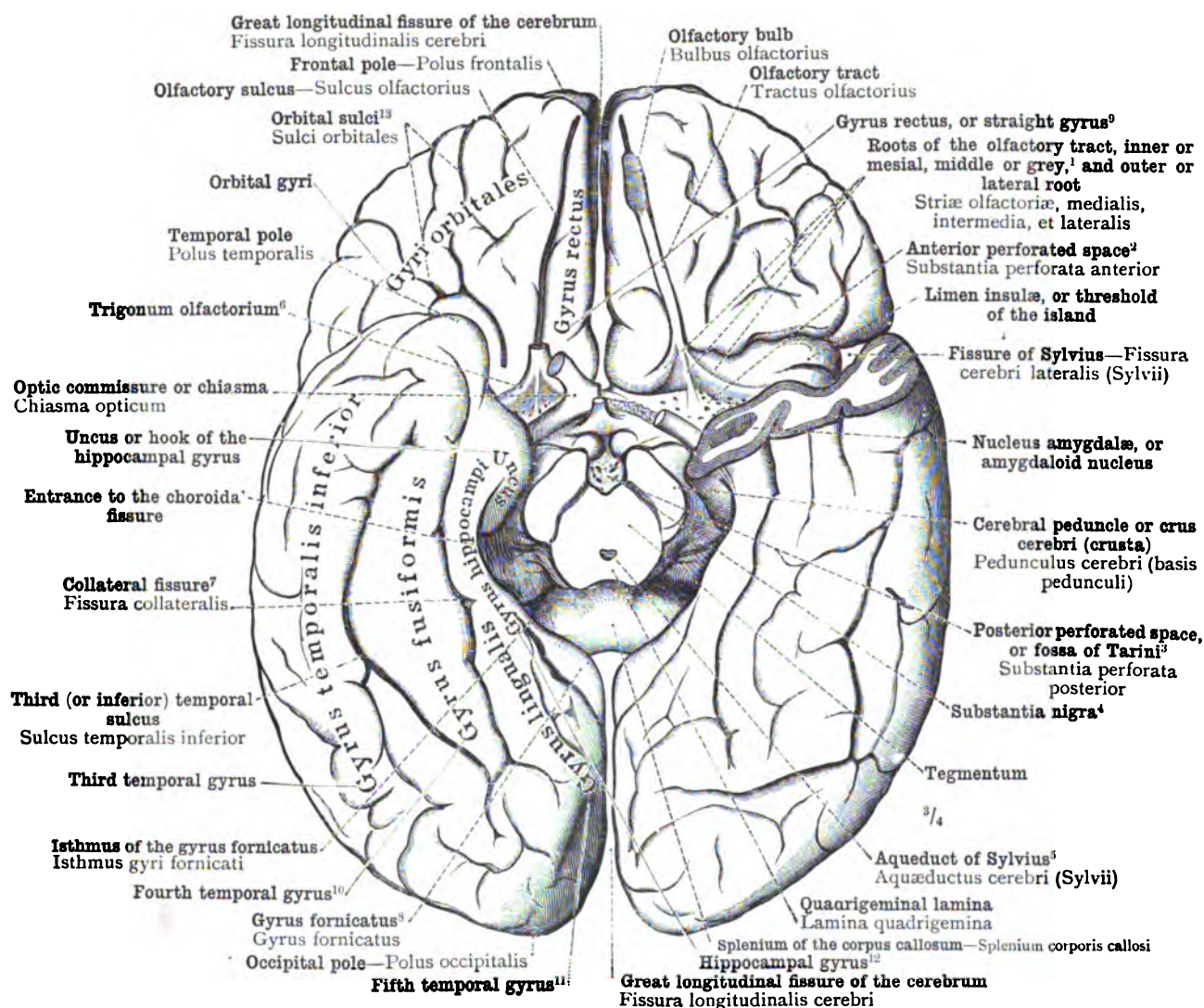


FIG. 1191.—THE INFERIOR OR BASAL SURFACE OF THE CEREBRUM, FACIES BASALIS CEREBRI; THE WHOLE EXTENT OF THIS SURFACE IS VISIBLE, THE MEDULLA OBLONGATA, PONS VAROLII, AND CEREBELLUM (*i.e.*, THE *RHOMBENCEPHALON—see Appendix, note ³⁵⁵) HAVING BEEN REMOVED BY A TRANSVERSE SECTION THROUGH THE MID-BRAIN. CONVOLUTIONS AND FURROWS OF THE HEMISPHERES, GYRI ET SULCI CEREBRI. THE FRONTAL, TEMPORAL, AND OCCIPITAL POLES OF THE HEMISPHERES.

The anterior extremity of the left temporal lobe has been cut away, the optic commissure or chiasma has been cut through in the median plane, and its left half has been removed. The anterior perforated space has thus been fully exposed on the left side, and its relations to the threshold of the island, limen insulae, and to the parts of the rhinencephalon situate on the mesial surface of the hemisphere, have been made manifest. The olfactory tract, tractus olfactorius, has been cut away on the right side, in order to display the olfactory sulcus.

¹ See Appendix, note ³⁶⁸.

² The grey matter forming the floor of the anterior perforated space is distinguished by the name of the anterior perforated plate or lamina.

³ The grey matter forming the floor of the posterior perforated space is distinguished by the name of the posterior perforated plate or lamina. See also Appendix, note ³⁶².

⁴ Called by Macalister the *locus niger*.

⁵ Or iter a tertio ad quartum ventriculū.

⁶ See Appendix, note ³⁶⁸.

⁷ Sometimes regarded also as the fourth temporal sulcus.

⁸ See Appendix, note ³⁷².

⁹ See Appendix, note ³⁷¹.

¹⁰ Fourth Temporal Gyrus.—The posterior part of this gyrus was formerly known in England as the *fusiform lobule*; and the gyrus as a whole is called by Todd *gyrus fusiformis*.

¹¹ Fifth Temporal Gyrus.—The author's name for this is *gyrus lingualis*, a modification of Huschke's *lingual lobule*; Wilder called it the *subcalcarine gyrus*; and it is often known as the *infracalcarine gyrus*. In front it is continued into the *hippocampal gyrus*. See note ¹² below.

¹² Hippocampal Gyrus.—This was formerly called the *subiculum cornu ammonis*; together with the fifth temporal or infracalcarine gyrus (see note ¹¹ above), it makes up the *uncinate gyrus*. See also Appendix, note ³⁹⁰.

¹³ Orbital Sulci.—The principal sulci of the orbital surface of the frontal lobe very commonly communicate with one another, combining to form what is known in England as the *orbital or triradiate sulcus*.

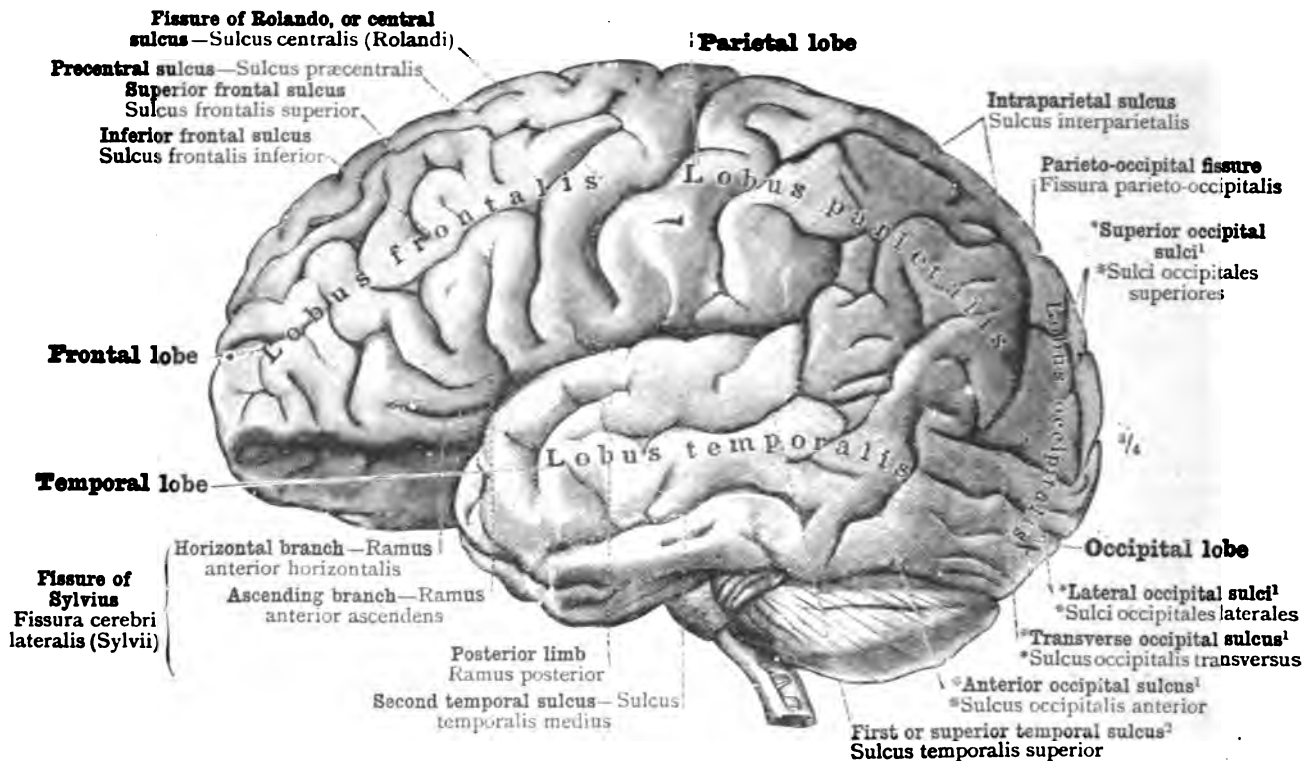


FIG. 1192.—THE CONVEX OR OUTER SURFACE, FACIES CONVEXA, OF THE LEFT CEREBRAL HEMISPHERE, SEEN FROM THE SIDE. FRONTAL, PARIETAL, TEMPORAL, AND OCCIPITAL LOBES.

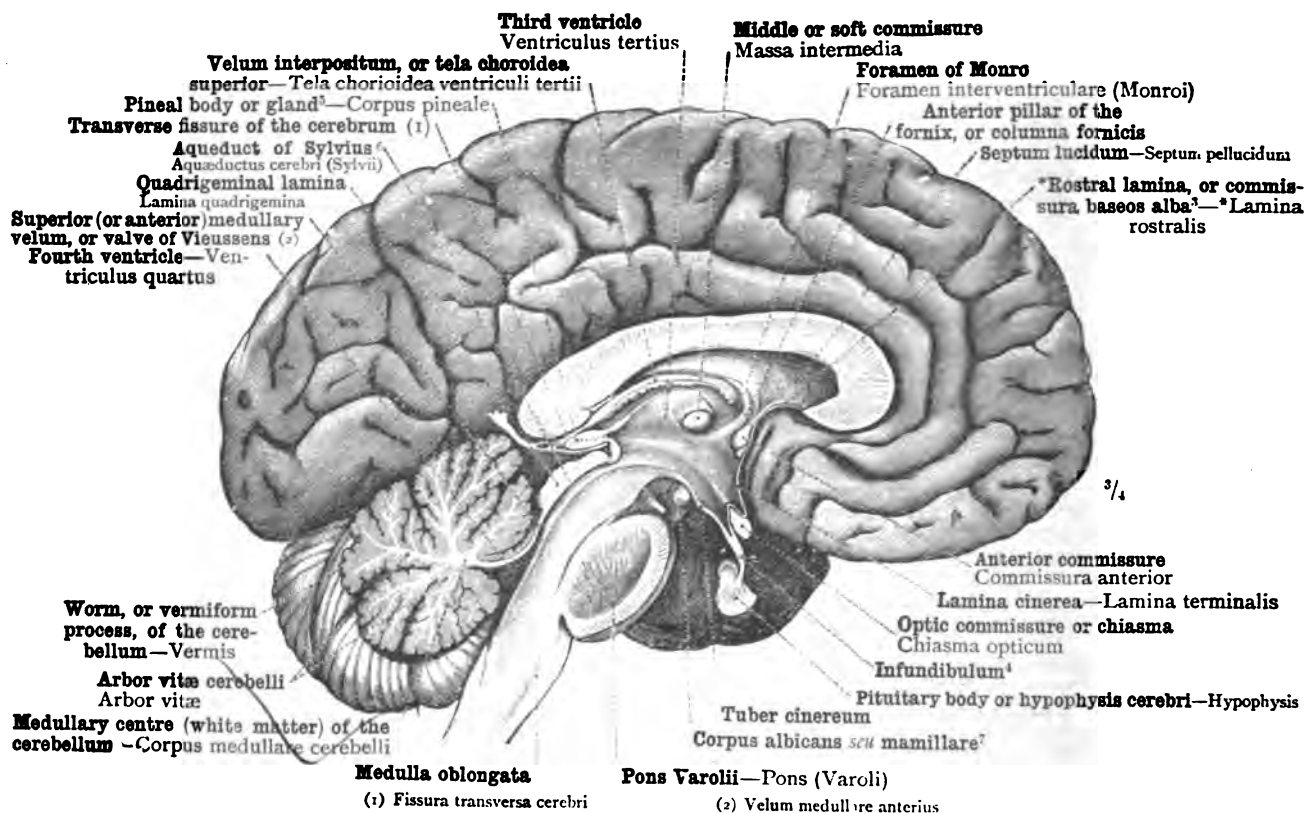


FIG. 1193.—MEDIAN SAGITTAL SECTION THROUGH THE BRAIN. THE INNER OR MESIAL SURFACE, FACIES MEDIALIS, OF THE LEFT CEREBRAL HEMISPHERE.

¹ See Appendix, note 386.

² See Appendix, note 361.

³ Or *iter a tertio ad quartum ventriculum*.

⁴ Also called, from its relation to the fissure of Sylvius, the *parallel fissure*.

⁵ Also known as the *conarium* and as the *epiphysis cerebri*. See Appendix, note 365.

⁶ Also known as the *bulb of the fornix*.

⁷ See Appendix, note 387.

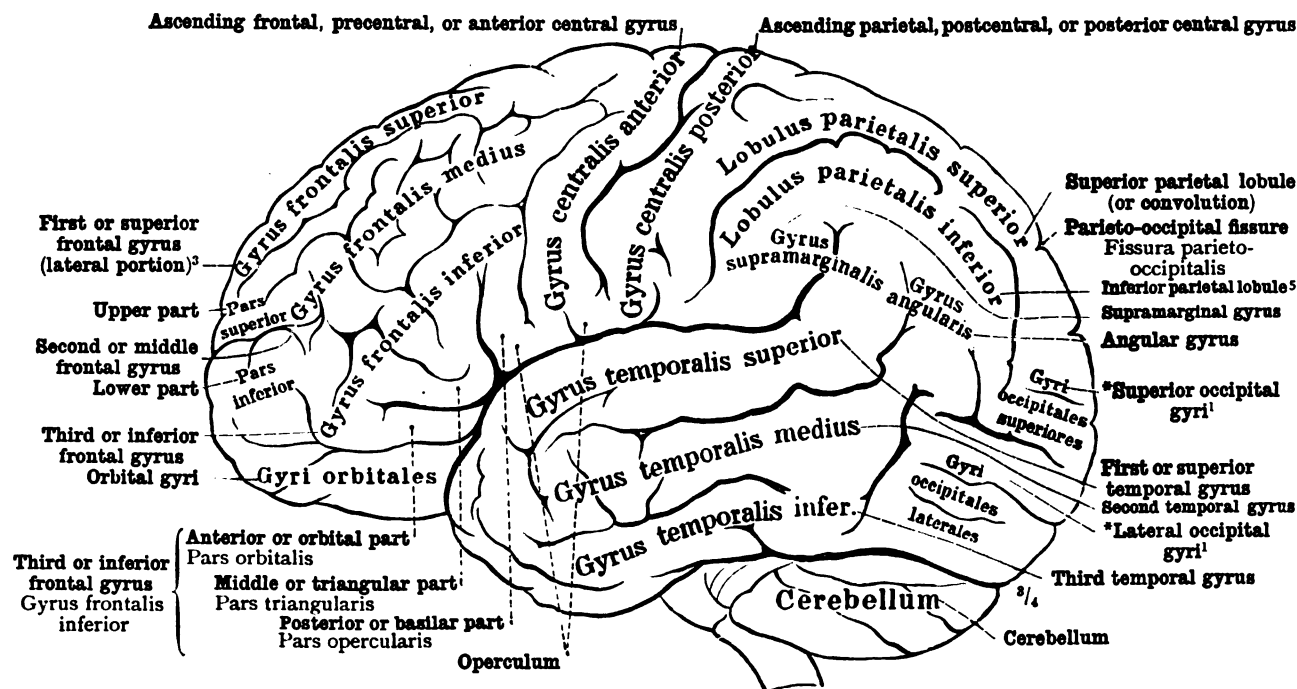


FIG. 1194.—THE LEFT HEMISPHERE, HEMISPHERIUM SINISTRUM, OF THE CEREBRUM; CONVEX OR OUTER SURFACE, FACIES CONVEXA, SEEN FROM THE SIDE. GYRI AND SULCI OF THE CEREBRUM.

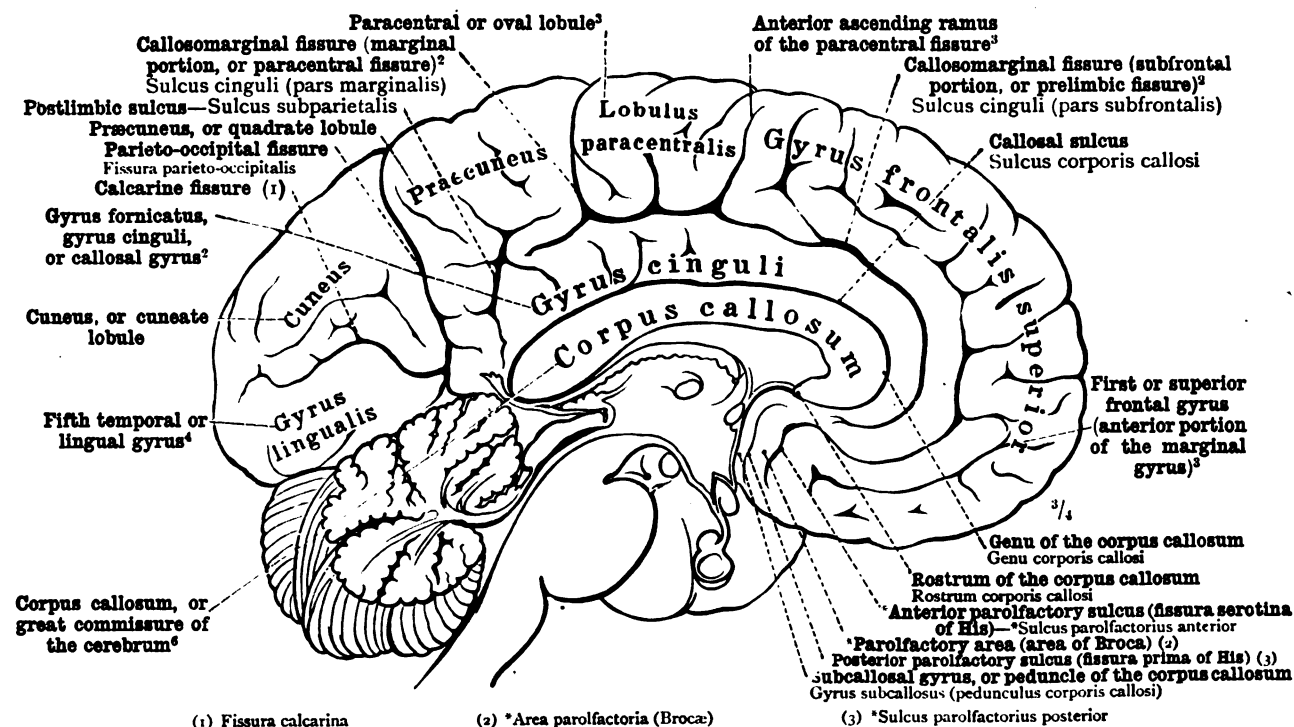


FIG. 1195.—MEDIAN SAGITTAL SECTION THROUGH THE BRAIN. GYRI AND SULCI OF THE INNER OR MESIAL SURFACE (FACIES MEDIALIS) OF THE LEFT CEREBRAL HEMISPHERE.

¹ See Appendix, note 386.

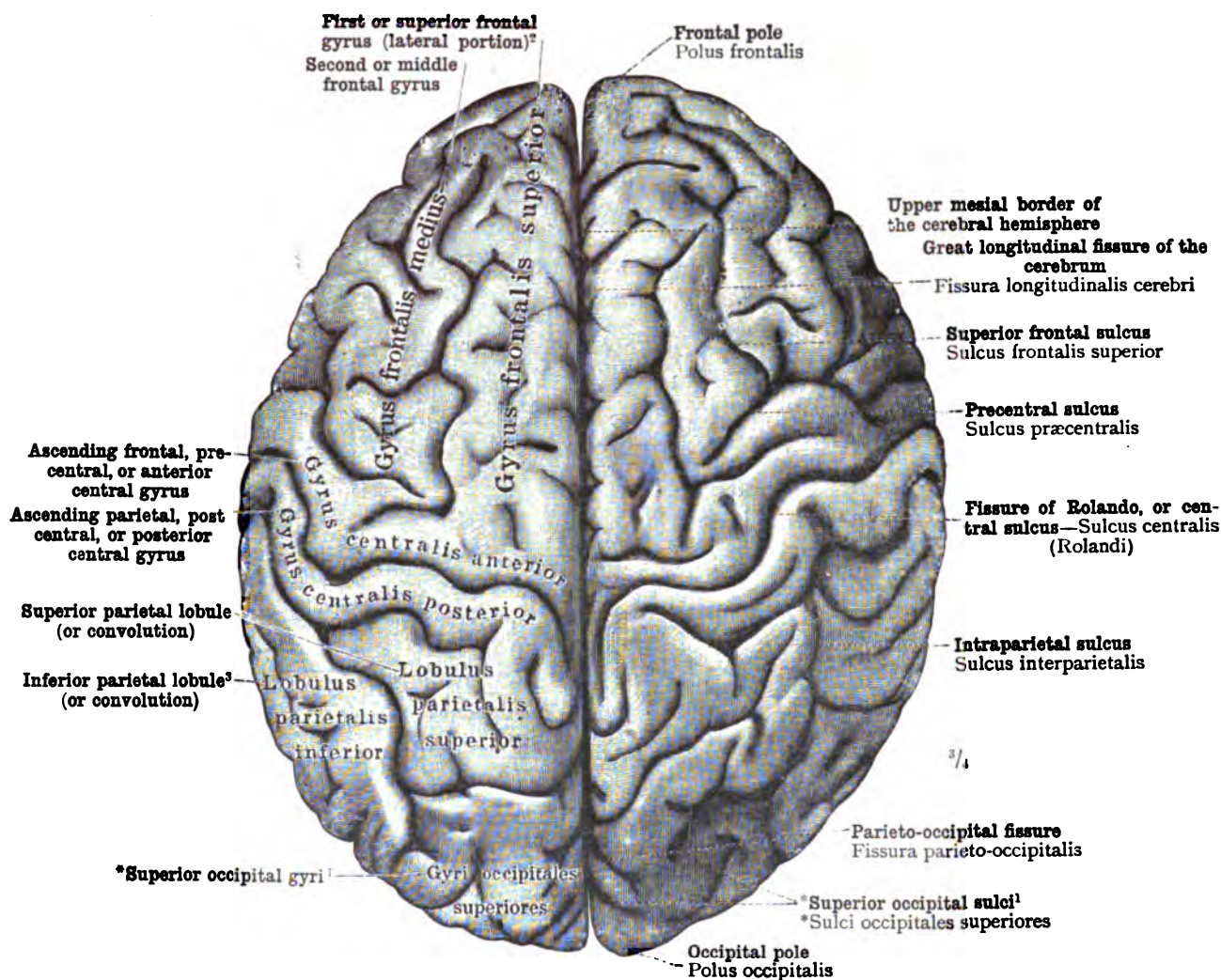
² See Appendix, note 390.

³ See Appendix, note 388.

⁴ See note 11 to p. 775.

⁵ *Inferior Parietal Lobule*.—Quain divides this into three gyri, the *supramarginal*, the *angular*, and the *postparietal*. The last named, which is not mentioned by Toldt, lies between the *gyrus angularis* and the *gyri occipitales superiores* in Fig. 1194.

⁶ Formerly known as the *trabs cerebri*.



¹ See Appendix, note 386.

² See Appendix, note 388.

³ See note to p. 777.

FIG. 1196.—THE HEMISPHERES OF THE CEREBRUM, HEMISPHERIA CEREBRI; THEIR OUTER OR CONVEX SURFACE, FACIES CONVEXA, SEEN FROM ABOVE. GYRI AND SULCI OF THE CEREBRUM. DIPPING DEEPLY BETWEEN THE TWO HEMISPHERES IS THE GREAT LONGITUDINAL FISSURE OF THE CEREBRUM; ON EITHER SIDE OF THIS FISSURE IS THE UPPER MESIAL BORDER OF THE HEMISPHERE, WHICH SEPARATES THE OUTER OR CONVEX SURFACE OF THE HEMISPHERE FROM ITS INNER OR MESIAL SURFACE, AND EXTENDS FROM THE FRONTAL TO THE OCCIPITAL POLE.

The Cerebrum.

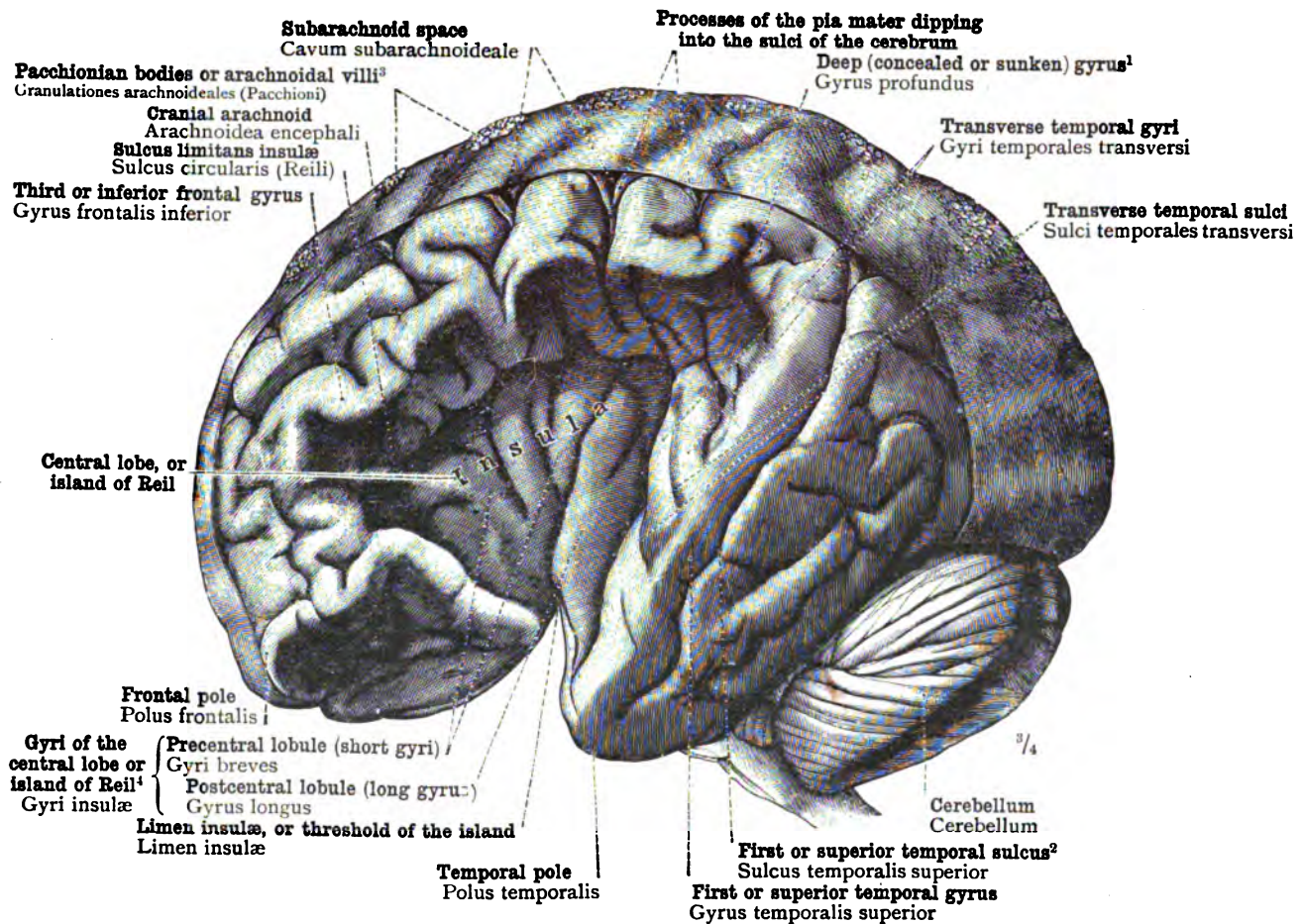


FIG. 1197.—THE OUTER OR CONVEX SURFACE, FACIES CONVEXA, OF THE LEFT CEREBRAL HEMISPHERE, SEEN FROM THE SIDE. THE TEMPORAL LOBE HAS BEEN DRAWN AWAY AS FAR AS POSSIBLE FROM THE FRONTAL AND PARIETAL LOBES, SO THAT THE SYLVIAN FISSURE IS WIDELY OPENED, AND IN THE DEPTH OF THIS FISSURE THE CENTRAL LOBE OR ISLAND OF REIL (INSULA) WITH ITS GYRI IS DISPLAYED, AND THE TRANSVERSE TEMPORAL SULCI AND GYRI ON THE UPPER SURFACE OF THE TEMPORAL LOBE ARE ALSO EXPOSED TO VIEW.

ON THE SURFACE OF THE UPPER PART OF THE HEMISPHERE THE PIA MATER AND THE ARACHNOID (PIA MATER ET ARACHNOIDEA ENCEPHALI) HAVE BEEN LEFT INTACT; BY DRAWING THE GYRI OF THIS PART OF THE BRAIN A LITTLE AWAY FROM ONE ANOTHER, THE LAMELLIFORM DUPLICATIONS OF PIA MATER PASSING TO THE BOTTOM OF THE SULCI ARE DISPLAYED. THROUGH THE DURA MATER, ALONG THE LINE OF THE SUPERIOR LONGITUDINAL SINUS, THE PACCHIONIAN BODIES (GRANULATIONES ARACHNOIDEALES PACCHIONI) ARE VISIBLE.

¹ *Gyri Profundi*.—This name is given by the author to convolutions that do not appear on the surface of the brain, being hidden in the depths of the sulci and fissures, and becoming visible only when these are widely opened. In England they are known most suitably as *concealed gyri*.

² Also called, from its relation to the fissure of Sylvius, the *parallel fissure*.

³ Known also as *Pacchionian glands* or *Pacchionian granulations*.

⁴ The longest and deepest sulcus on the surface of the island of Reil, which separates the precentral lobule (gyri breves) from the post-central lobule (gyrus longus), has been called the *sulcus centralis insulae*. It is well marked in Fig. 1197.

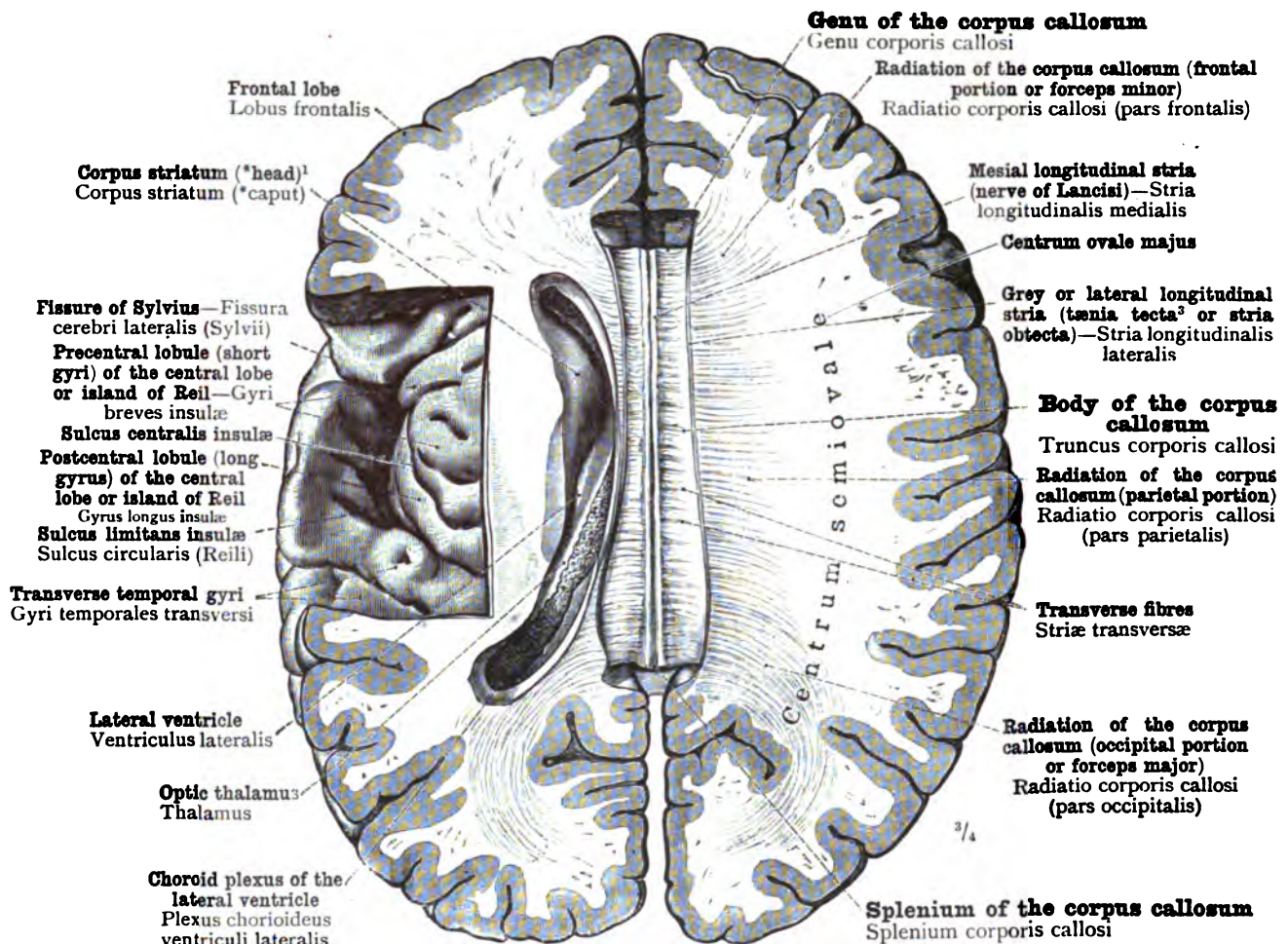


FIG. 1198.—THE UPPER PART OF BOTH CEREBRAL HEMISPHERES HAS BEEN REMOVED BY A SECTION IN THE PLANE OF THE DORSAL SURFACE OF THE CORPUS CALLOSUM OR GREAT COMMISSURE OF THE CEREBRUM (TRABS CEREBRI), SO THAT THE DORSUM OF THAT BODY IS FULLY EXPOSED, AND THE MEDULLARY CENTRE OR WHITE MATTER (MEDITULLIUM) OF THE CEREBRAL HEMISPHERES IS SEEN IN SECTION AS THE CENTRUM OVALE MAJUS (CENTRUM SEMIOVALE)².

IN THE RIGHT HEMISPHERE, THE SEVERAL PORTIONS OF THE RADIATION OF THE FIBRES OF THE CORPUS CALLOSUM (RADIATIO CORPORIS CALLOSI) ARE INDICATED. IN THE LEFT HEMISPHERE, SEGMENTS HAVE BEEN REMOVED IN SUCH A MANNER AS ON THE ONE HAND TO EXPOSE FROM ABOVE THE CENTRAL LOBE OR ISLAND OF REIL (INSULA), AND ON THE OTHER TO OPEN THE LATERAL VENTRICLE, AND THUS TO DISPLAY THE *HEAD OF THE CORPUS STRIATUM (i.e., THE HEAD OF THE CAUDATE OR INTRAVENTRICULAR NUCLEUS OF THE CORPUS STRIATUM—see note ¹ to p. 766) WITH THE NEIGHBOURING PART OF THE OPTIC THALAMUS. THE MUTUAL RELATIONS OF THESE PARTS OF THE CEREBRUM ARE THUS MADE MANIFEST.

¹ See note ¹ to p. 766.

² *Centrum Semiovale*.—The central white matter seen in a horizontal section of one cerebral hemisphere at the level of the horizontal part of the callosomarginal fissure is known as the *centrum ovale minus*. If the upper part of both hemispheres be removed by a horizontal section in the plane of the dorsal surface of the corpus callosum, the white centres of the two hemispheres united by the upper surface of the corpus callosum make up the *centrum ovale majus*. The author is therefore strictly accurate in speaking of the white matter of a single hemisphere displayed by a section at this level as the *centrum semiovale*, but the latter term is not often used in England.

³ See Appendix, note 392.

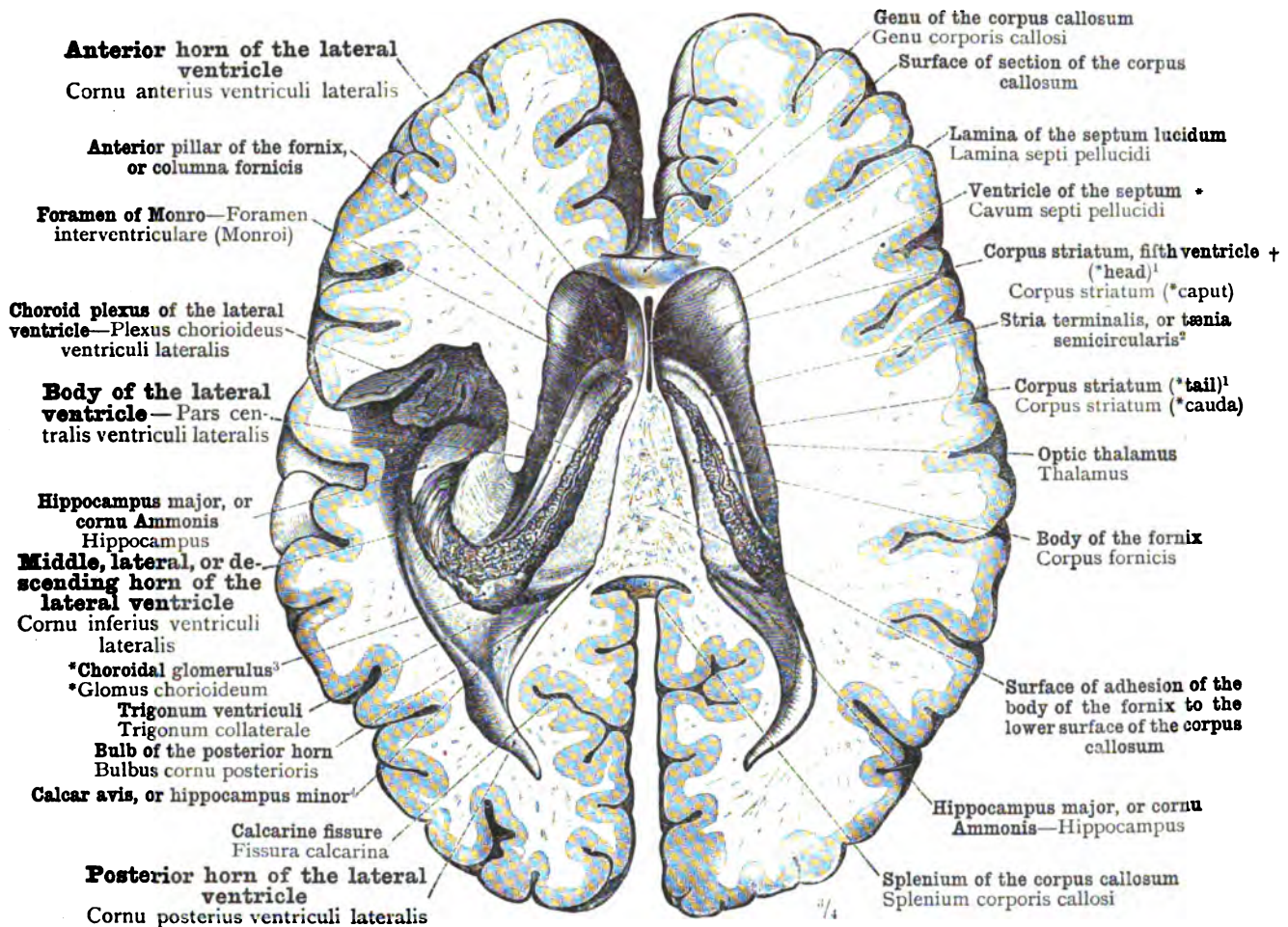


FIG. 1199.—THE UPPER PORTION OF THE CEREBRAL HEMISPHERES AND OF THE CORPUS CALLOSUM OR GREAT COMMISSURE OF THE CEREBRUM (TRABS CEREBRI) HAVING BEEN REMOVED, THE UPPER OR DORSAL SURFACE OF THE FORNIX WAS EXPOSED AND BOTH LATERAL VENTRICLES (VENTRICULI LATERALES) WERE OPENED. IN THE RIGHT HEMISPHERE, THE ANTERIOR HORN (CORNU ANTERIUS), POSTERIOR HORN (CORNU POSTERIUS), AND THE BODY (PARS CENTRALIS), ONLY, OF THE VENTRICLE ARE DISPLAYED; WHEREAS IN THE LEFT HEMISPHERE, BY THE REMOVAL OF A FURTHER PORTION OF THE BRAIN SUBSTANCE, THE POSTERIOR HORN (CORNU POSTERIUS), DESCENDING INTO THE TEMPORAL LOBE, HAS ALSO BEEN OPENED. THE SEPTUM BETWEEN THE TWO ANTERIOR HORNS, KNOWN AS THE SEPTUM LUCIDUM (SEPTUM PELLUCIDUM), IS SEEN IN HORIZONTAL SECTION; ITS RIGHT AND LEFT LATERAL LAMINÆ (LAMINÆ SEPTI PELLUCIDI) ARE SEPARATED ONE FROM ANOTHER BY A MEDIAN CAVITY KNOWN AS THE VENTRICLE OF THE SEPTUM OR FIFTH VENTRICLE (CAVUM SEPTI PELLUCIDI).

¹ See note ¹ to p. 766.

² See Appendix, note 392.

³ *Choroidal Glomerulus*.—"The thickened margin of the velum interpositum projects freely on either side into the body of the lateral ventricle, forming the choroid plexus of that cavity, which extends along the posterior pillar of the fornix (crus fornicis) into the descending horn of the lateral ventricle; just before it enters the descending horn, the choroid plexus exhibits a considerable enlargement, the *glomus chorioideum*" (Von Langer and Toldt, *op. cit.*, p. 605). This structure is described neither by Quain nor by Macalister.

⁴ Or *ergot* (Morand).

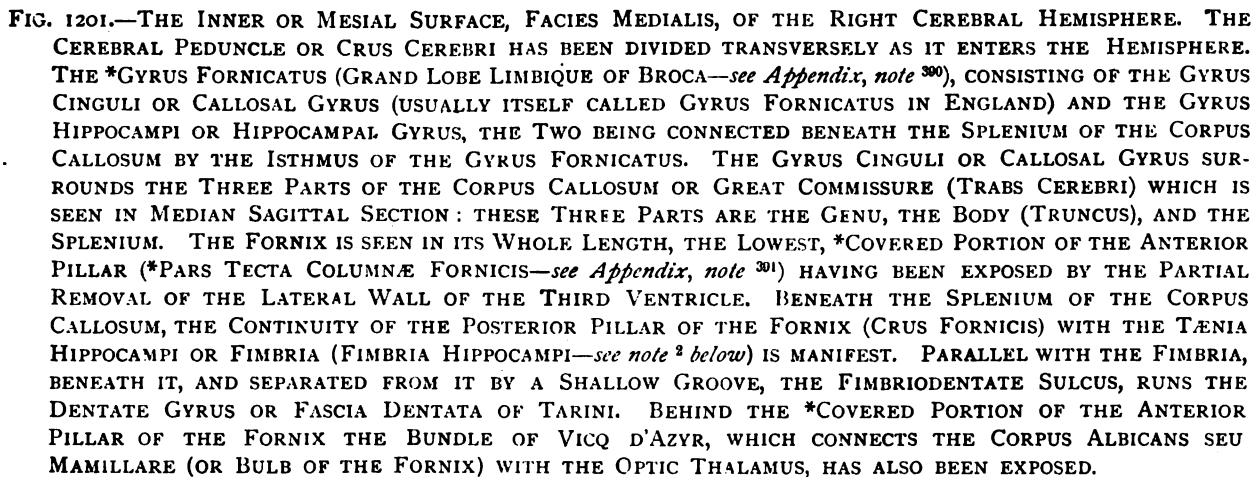
The Cerebrum.

ERRATUM.

* Add the words or fifth ventricle.

† Delete the words fifth ventricle.





⁵ The fifth temporal gyrus or lingual lobule and the hippocampal gyrus together make up the *uncinate gyrus*. The former is also known as the *subcalcarine* or *infracalcarine gyrus*, and the latter as the *subiculum cornu Ammonis*. See also Appendix, note 39.

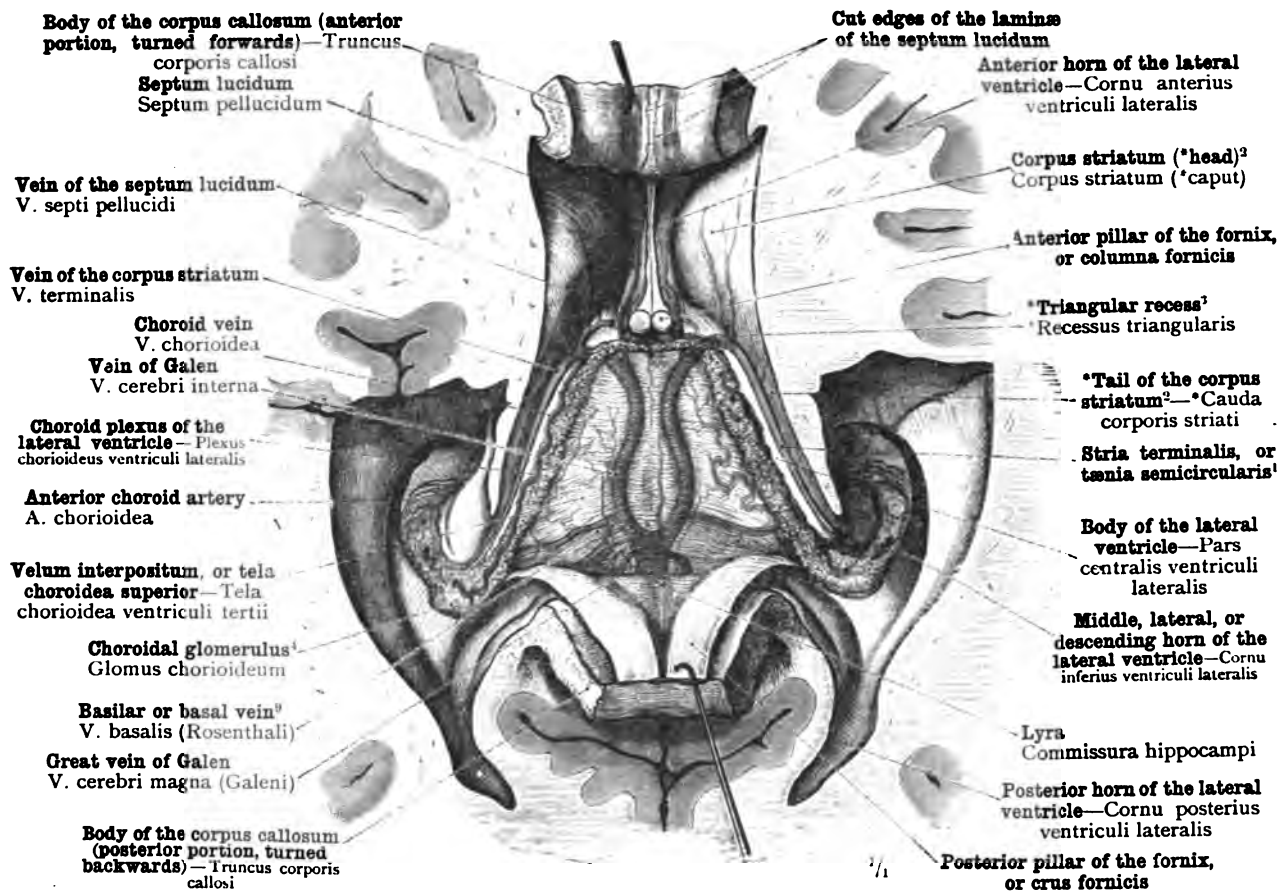
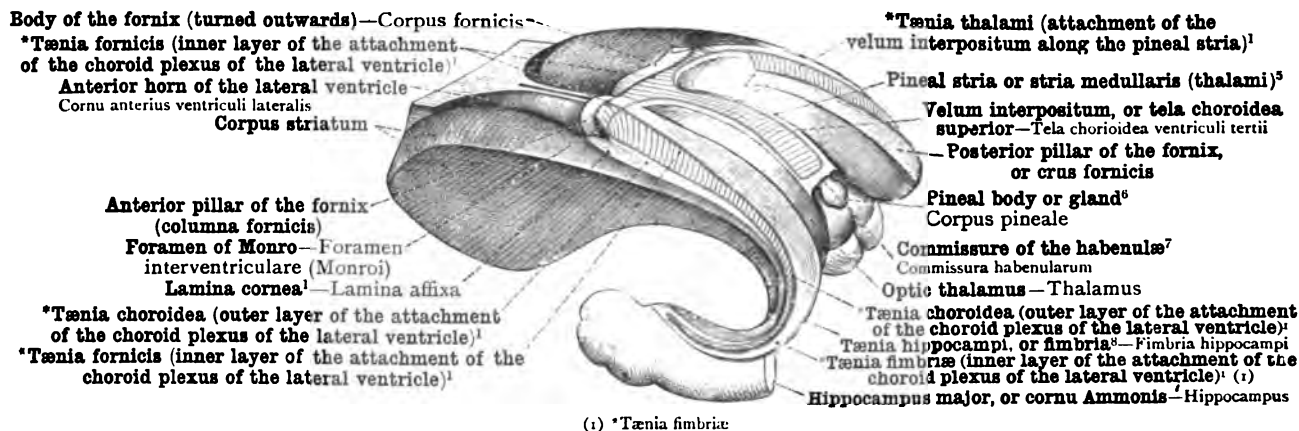


FIG. 1202.—THE VELUM INTERPOSITUM OR TELA CHORIOIDEA SUPERIOR (TELA CHORIOIDEA VENTRICULI TERTII), WITH THE CHOROID PLEXUSES OF THE LATERAL VENTRICLES (PLEXUS CHORIOIDEI VENTRICULORUM LATERALIIUM), LAID BARE FROM ABOVE. THE LARGER BLOODVESSELS OF THE VELUM INTERPOSITUM AND THE CHOROID PLEXUSES HAVE BEEN RENDERED MORE CONSPICUOUS BY INJECTION



(1) *Tænia fimbriae

FIG. 1203.—THE LINES OF ATTACHMENT OF THE VELUM INTERPOSITUM AND THE CHOROID PLEXUSES OF THE LATERAL VENTRICLES (TÆNIA TELARUM¹) IN THE PROSENCEPHALON AND THALAMENCEPHALON. DIAGRAMMATIC. THE RIGHT POSTERIOR PILLAR OF THE FORNIX HAS BEEN CUT THROUGH WITH THE VELUM INTERPOSITUM, AND ITS ANTERIOR PORTION HAS BEEN TURNED OUTWARDS. ON THE LEFT SIDE, ALSO, THE ANTERIOR PORTION OF THE FORNIX HAS BEEN DRAWN A LITTLE UPWARDS. SEEN OBLIQUELY FROM ABOVE AND THE LEFT SIDE.

¹ See Appendix, note 392.

² See note ¹ to p. 766.

³ See Appendix, note 399.

⁴ See note 3 to p. 781.

⁵ Often known in England as the *tænia fornicis*. See Appendix, notes 399, 395, and 392.

⁶ Known also as the *conarium* and as the *epiphysis cerebri*. See Appendix, note 395.

⁷ Called by Macalister the *transverse frenulum of the pineal body*. See Appendix, note 395.

⁸ Called by Macalister the *corpus fimbriatum*. See also Appendix, note 392.

⁹ See Appendix to Part V., note 297.

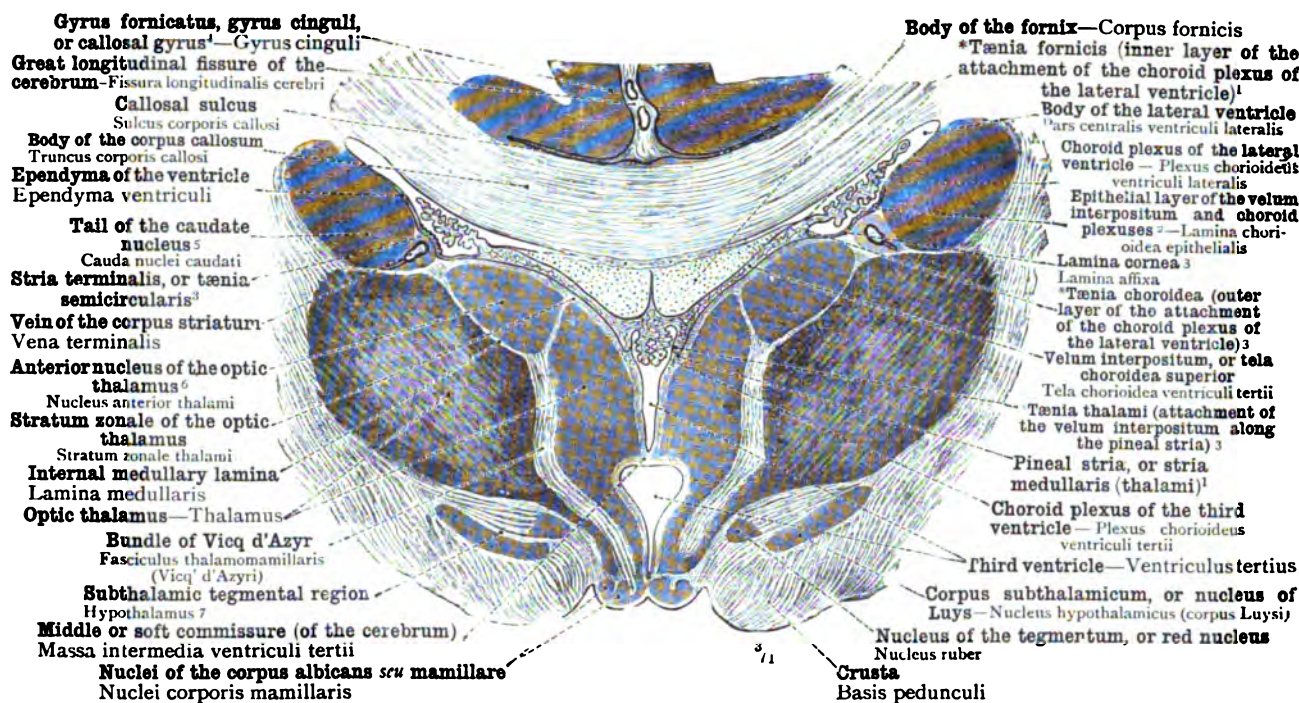


FIG. 1204.—CORONAL SECTION THROUGH THE MIDDLE OF THE THIRD VENTRICLE AND THE ADJOINING PARTS OF THE ENCEPHALON. THE VELUM INTERPOSITUM OR TELA CHORIOIDEA SUPERIOR AND THE CHOROID PLEXUSES OF THE THIRD AND LATERAL VENTRICLES ARE SEEN IN TRANSVERSE SECTION. THE ATTACHMENT OF THE CHOROID PLEXUS OF THE LATERAL VENTRICLE TO THE OUTER FREE BORDER OF THE FORNIX BY MEANS OF THE *TÆNIA FORNICIS¹; TO THE LAMINA CORNEA (LAMINA AFFIXA) AND THE EPENDYMA OF THE LATERAL VENTRICLE BY MEANS OF THE *TÆNIA CHORIOIDEA (see Appendix, note ³⁰²); AND, FINALLY, THE ATTACHMENT OF THE LOWER SURFACE OF THE VELUM INTERPOSITUM TO THE PINEAL STRIA (STRIA MEDULLARIS THALAMI) BY MEANS OF THE TÆNIA THALAMI.¹

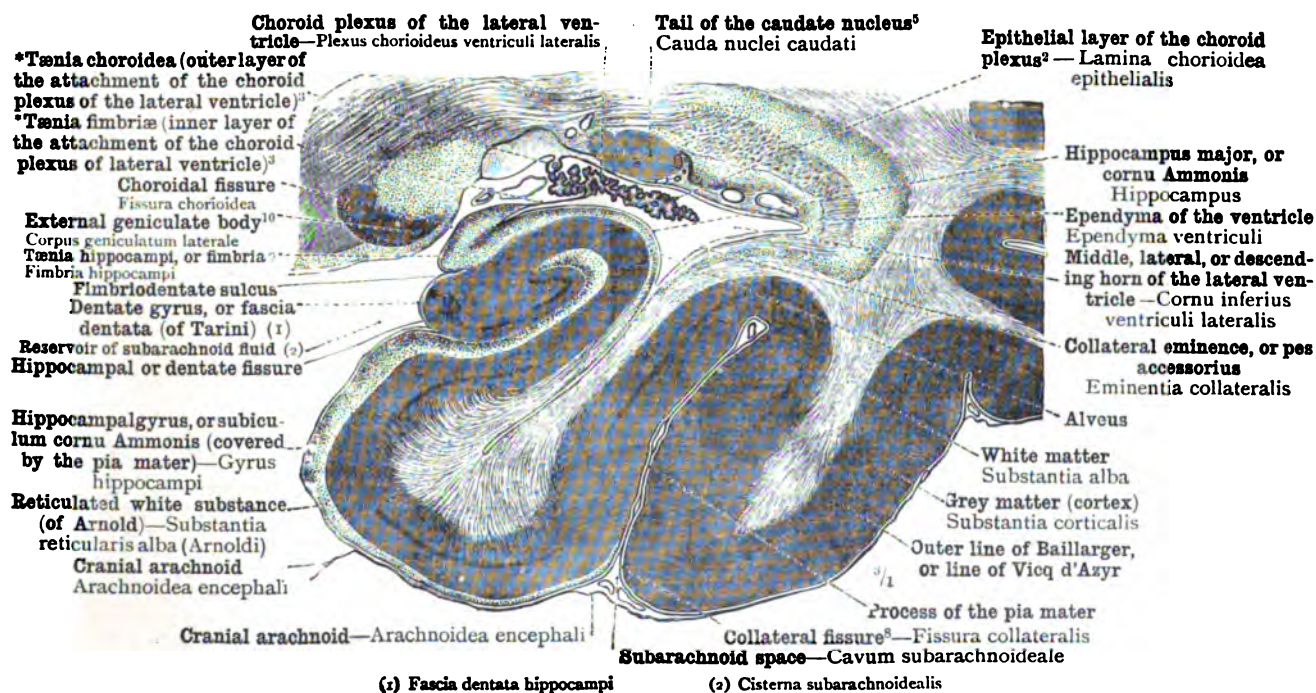


FIG. 1205.—CORONAL SECTION THROUGH THE MIDDLE, LATERAL, OR DESCENDING HORN OF THE RIGHT LATERAL VENTRICLE AND THE HIPPOCAMPAL GYRUS OR SUBICULUM CORNU AMMONIS. THE CHOROID PLEXUS IS SEEN IN TRANSVERSE SECTION. IT IS CONNECTED WITH THE EPENDYMA OF THE DESCENDING HORN BY MEANS OF THE *TÆNIA CHORIOIDEA, AND WITH THE MARGIN OF THE TÆNIA HIPPOCAMPI OR FIMBRIA (FIMBRIA HIPPOCAMPI OR CORPUS FIMBRIATUM) BY MEANS OF THE *TÆNIA FIMBRIÆ (see Appendix, note ³⁰²).

¹ See Appendix, note 392. The **tænia fornicis* of Toldt must not be confused with the *tænia fornicis* of English authors, the latter being also known as the *pineal stria*. See Appendix, notes 339 and 365.

² Or *epithelium of the plexuses* (Quain). See Appendix, note 374.

³ See Appendix, note 392.

⁴ See Appendix, note 390.

⁵ See note 1 to p. 766.

⁶ Also known as the *nucleus of the anterior tubercle of the optic thalamus*.

⁷ See Appendix, note 354.

⁸ Sometimes regarded as the *fourth temporal sulcus*.

⁹ Called by Macalister the *corpus fimbriatum*. See Appendix, note 392.

¹⁰ Or *lateral geniculate body*.

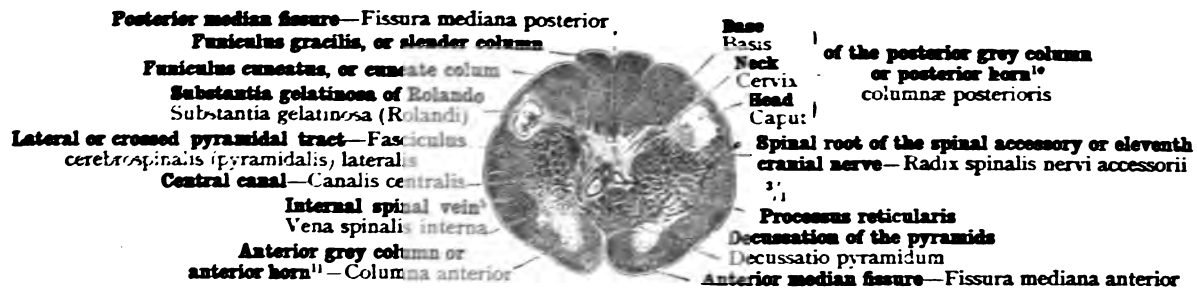


FIG. 1206.—TRANSVERSE SECTION THROUGH THE PYRAMIDAL DECUSSATION. LOWER OR CLOSED PART OF THE MEDULLA OBLONGATA.

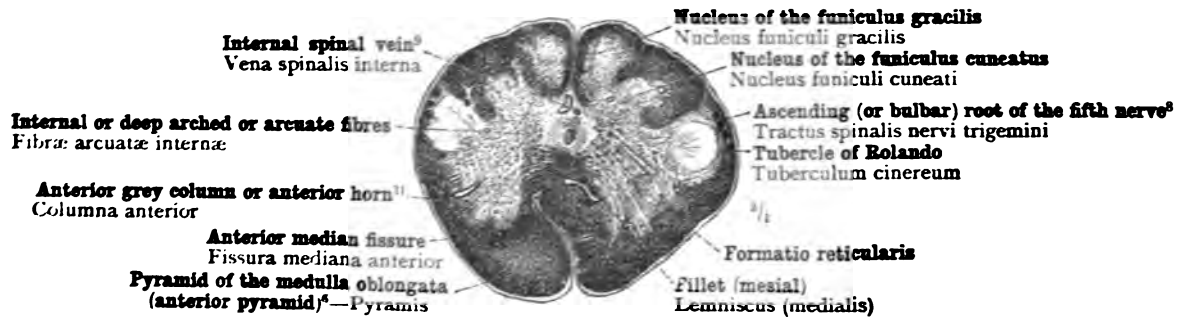


FIG. 1207.—TRANSVERSE SECTION THROUGH THE PYRAMIDS BELOW THE OLIVES. LOWER OR CLOSED PORTION OF THE MEDULLA OBLONGATA.



FIG. 1208.—TRANSVERSE SECTION THROUGH THE LOWER EXTREMITY OF THE OLIVARY BODY OR LOWER OLIVE. LOWER PART OF THE FLOOR OF THE FOURTH VENTRICLE (PARS INFERIOR FOSSÆ RHOMBOIDEÆ—see Appendix, note ³⁵⁵).

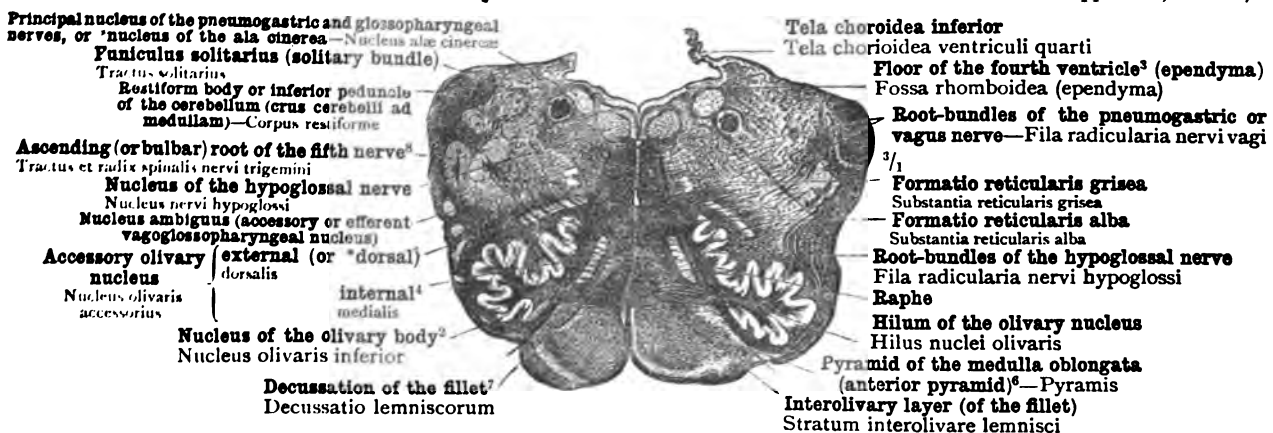


FIG. 1209.—TRANSVERSE SECTION THROUGH THE MIDDLE OF THE OLIVARY BODY OR LOWER OLIVE. LOWER PART OF THE FLOOR OF THE FOURTH VENTRICLE (PARS INFERIOR FOSSÆ RHOMBOIDEÆ—see Appendix, note ³⁵⁵).

TRANSVERSE SECTIONS THROUGH THE MEDULLA OBLONGATA. (THE WHITE MATTER IS SHADED, THE GREY MATTER UNSHADED.)

¹ See Appendix, note ³⁹³.

² Or (inferior) olivary nucleus; also known as the *corpus dentatum* of the olive. See Appendix, note ³⁹⁵.

³ See Appendix, note ³⁵⁵.

⁴ By Macalister called the *internal parolivary nucleus*.

⁵ By Macalister called *nucleus arciformis*.

⁶ Called by Gowers the *lower root*.

⁷ See Appendix, note ³⁹³.

⁸ See Appendix to Part V., note ²⁹⁸.

⁹ Regarding the use of the term *posterior grey column*, see Appendix, note ³³⁹.

¹⁰ See Appendix, note ³³⁹.

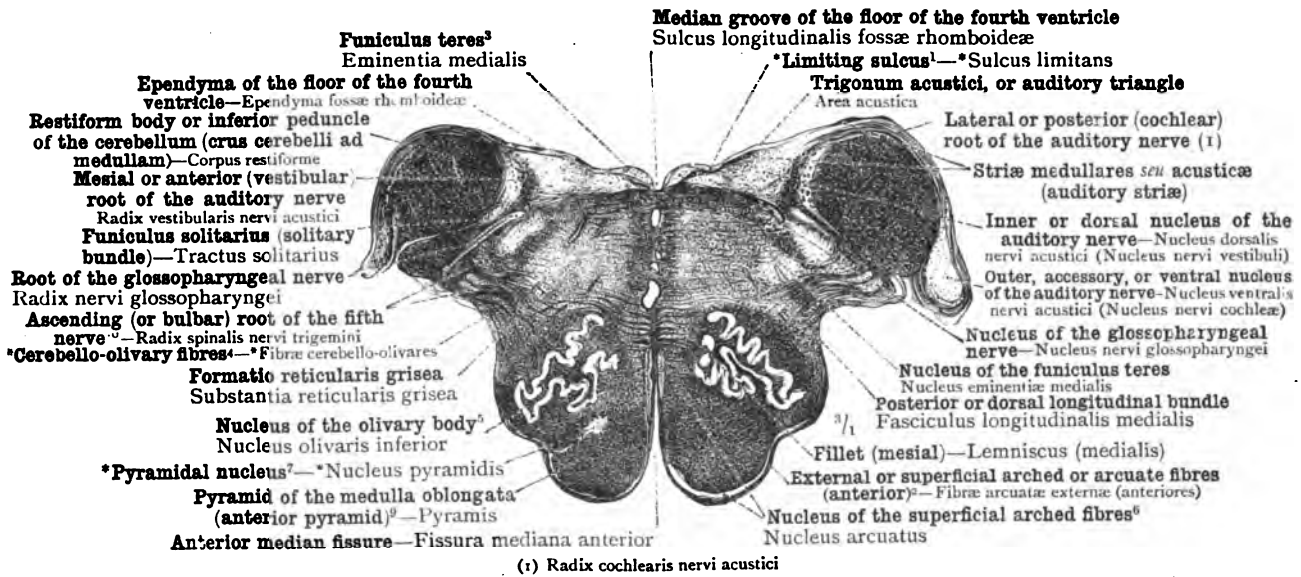


FIG. 1210.—TRANSVERSE SECTION THROUGH THE MEDULLA OBLONGATA, AT THE LEVEL OF THE UPPER EXTREMITY OF THE OLIVARY BODY OR LOWER OLIVE, TRAVERSING THE TRIGONUM ACUSTICI OR AUDITORY TRIANGLE. MIDDLE OR INTERMEDIATE PORTION OF THE FLOOR OF THE FOURTH VENTRICLE (PARS INTERMEDIA FOSSÆ RHOMBOIDEÆ—see Appendix, note ³⁵⁵).

The white matter is shaded, the grey matter unshaded.

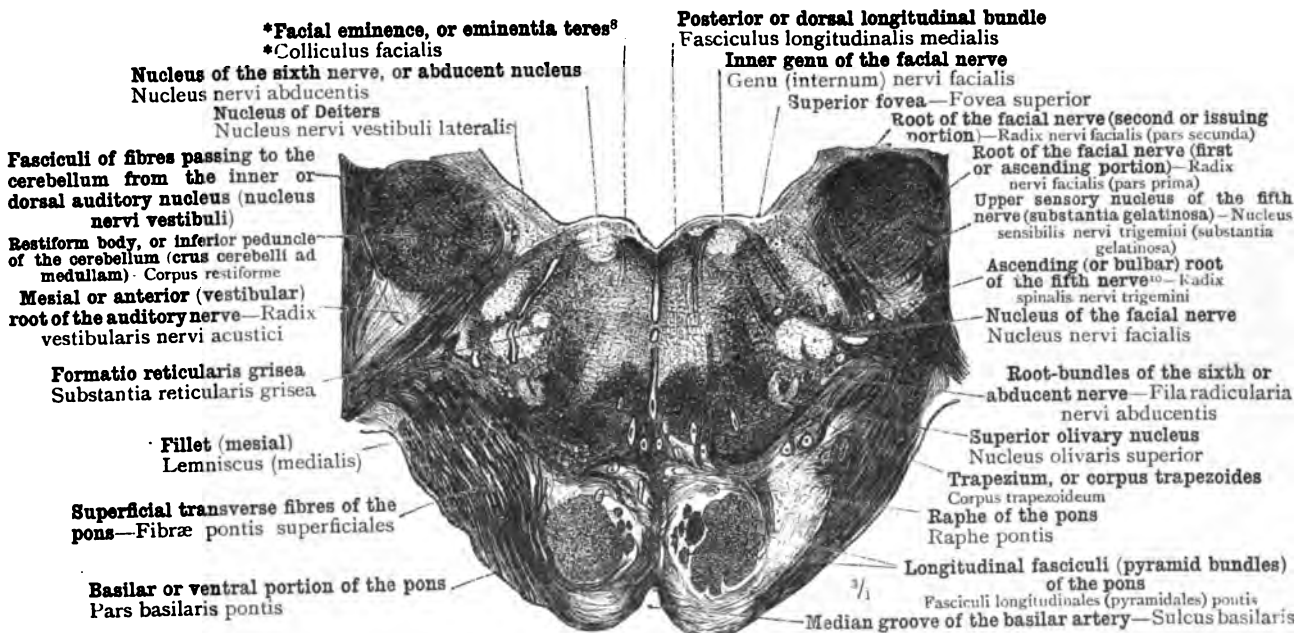


FIG. 1211.—TRANSVERSE SECTION THROUGH THE LOWER BORDER OF THE PONS VAROLII AND THE *FACIAL EMINENCE OR EMINENTIA TERES (*COLLICULUS FACIALIS—see Appendix, note ³⁷⁰). MIDDLE OR INTERMEDIATE PORTION OF THE FLOOR OF THE FOURTH VENTRICLE (PARS INTERMEDIA FOSSÆ RHOMBOIDALIS—see Appendix, note ³⁵⁵).

The white matter is shaded, the grey matter unshaded.

¹ See Appendix, note 377.

² See Appendix, note 373.

³ See Appendix, note 376.

⁴ See Appendix, note 395.

⁵ Or (inferior) olivary nucleus; also known as the corpus dentatum of the olive.

⁶ See Appendix, note 385.

⁷ By Macalister called nucleus arciformis.

⁸ See Appendix, note 376.

⁹ See Appendix, note 393.

¹⁰ Called by Gowers the lower root.

Transverse Sections through the Brain.

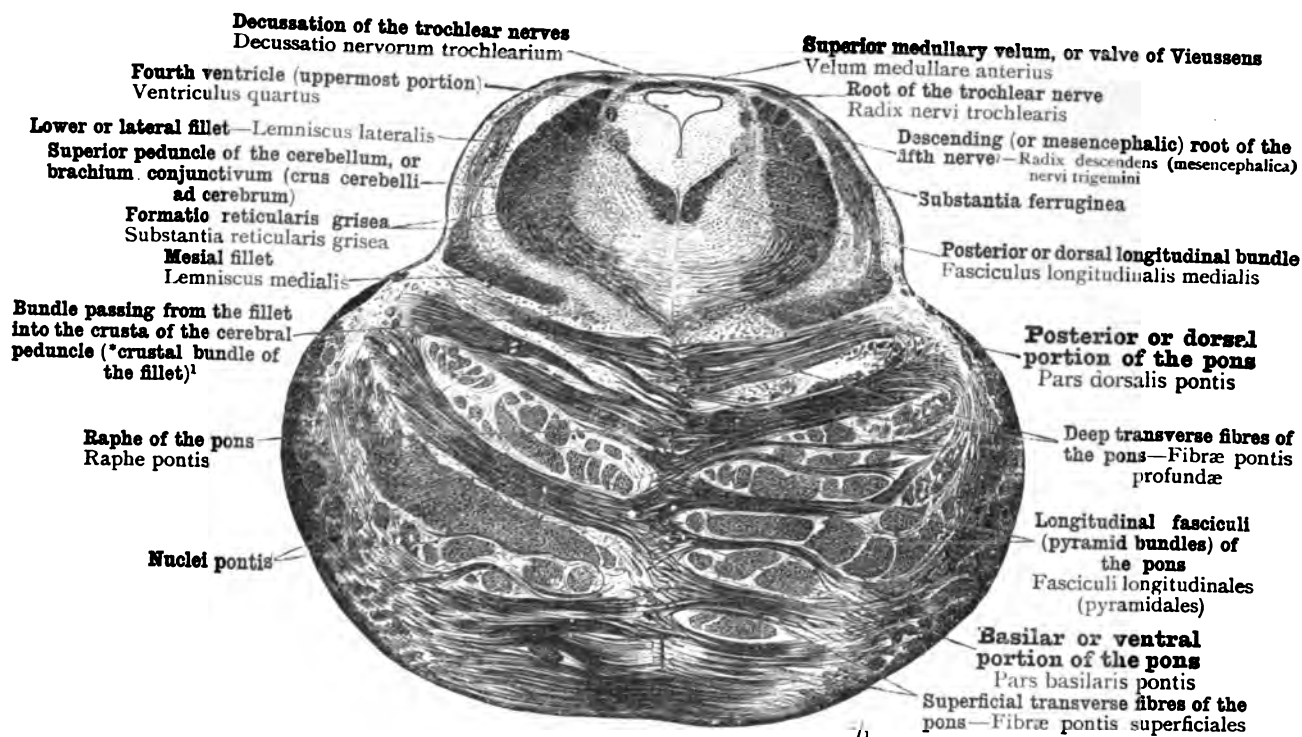


FIG. 1212.—TRANSVERSE SECTION THROUGH THE MIDDLE OF THE PONS VAROLII AND THE SUPERIOR MEDULLARY VELUM, OR VALVE OF VIEUSSENS. *ISTHMUS RHOMBENCEPHALI (see Appendix, note 300); UPPER PORTION OF THE FLOOR OF THE FOURTH VENTRICLE (PARS SUPERIOR FOSSÆ RHOMBOIDEÆ—see Appendix, note 355).
White matter shaded, grey matter unshaded.

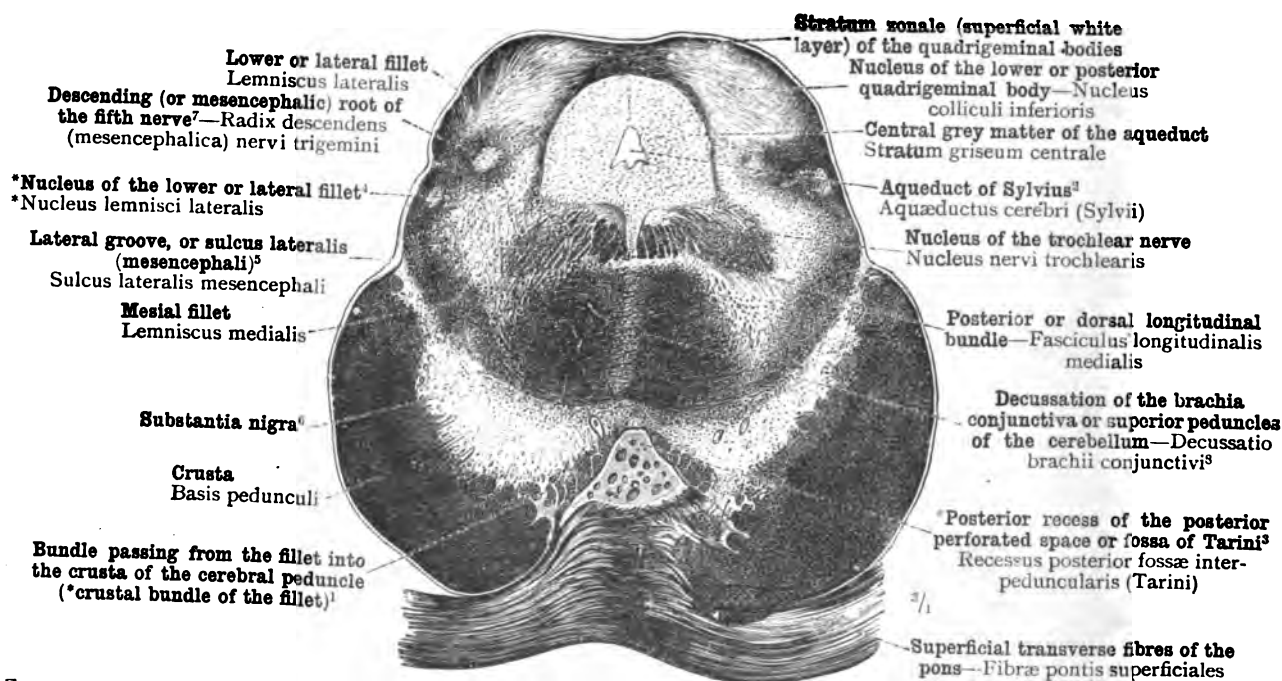


FIG. 1213.—TRANSVERSE SECTION THROUGH THE UPPER BORDER OF THE PONS VAROLII, PASSING THROUGH THE HINDMOST PORTION OF THE CRURA CEREBRI OR CEREBRAL PEDUNCLES AND THE LOWER OR POSTERIOR CORPORA QUADRIGEMINA. MID-BRAIN OR MESENCEPHALON.
White matter shaded, grey matter unshaded.

¹ See Appendix, note 397.

² See Appendix, note 328.

³ Or iter a tertio ad quartum ventriculum.

⁴ See Appendix, note 329.

⁵ Called by Gowers the *upper root*.

⁶ See Appendix, note 362.

⁷ Called by Macalister the *locus niger*.

⁸ See note 11 to p. 772.

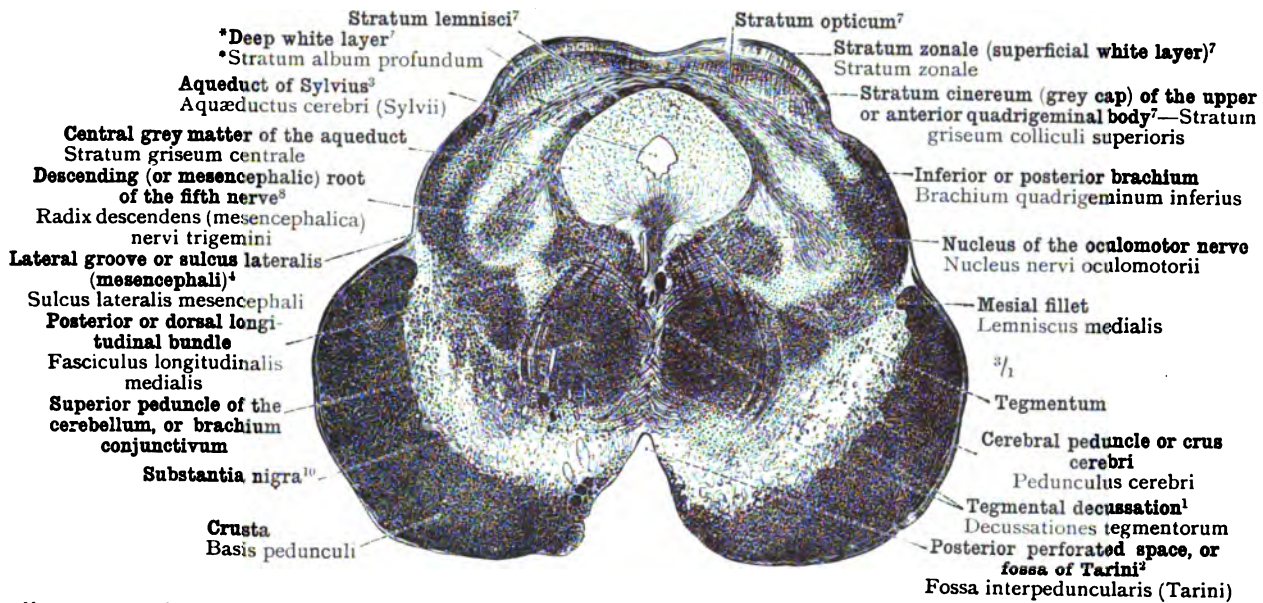


FIG. 1214.—TRANSVERSE SECTION THROUGH THE MIDDLE OF THE CEREBRAL PEDUNCLE OR CRUS CEREBRI, THROUGH THE TEGMENTUM, AND THROUGH THE UPPER OR ANTERIOR QUADRIGEMINAL BODIES. MID-BRAIN OR MESENCEPHALON.

White matter shaded, grey matter unshaded.

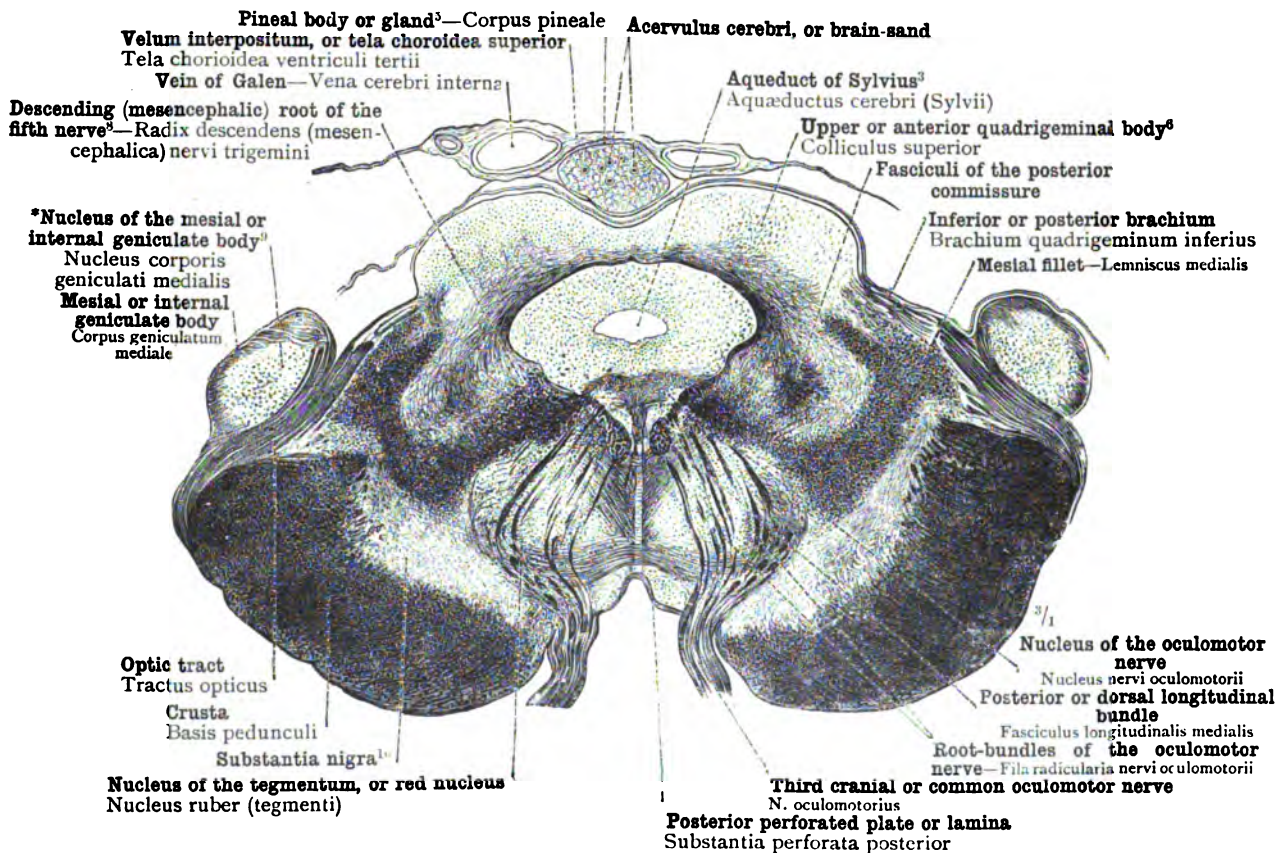


FIG. 1215.—TRANSVERSE SECTION THROUGH THE FRONT OF THE CEREBRAL PEDUNCLE OR CRUS CEREBRI, THROUGH THE NUCLEUS OF THE TEGMENTUM OR RED NUCLEUS, THROUGH THE UPPER OR ANTERIOR QUADRIGEMINAL BODIES AND THE PINEAL BODY OR GLAND (see note ⁶ below). MID-BRAIN OR MESENCEPHALON, ADJACENT TO THE INTERBRAIN OR THALAMENCEPHALON.

White matter shaded, grey matter unshaded.

- ¹ See Appendix, note 399.
² See Appendix, note 36a.
³ Or *iter a tertio ad quartum ventriculum*.
⁴ See Appendix, note 369.
⁵ Known also as the *conarium* and as the *epiphysis cerebri*. See Appendix, note 365.
⁶ See Appendix, note 372.
⁷ See Appendix, note 400.
⁸ Called by Gowers the *upper root*.
⁹ *Nuclei of the Geniculate Bodies*.—The grey matter in the interior of the geniculate bodies is called by Toldt the *nuclei* of these bodies. The name is not used by Quain.
¹⁰ Called by Macalister the *locus niger*.

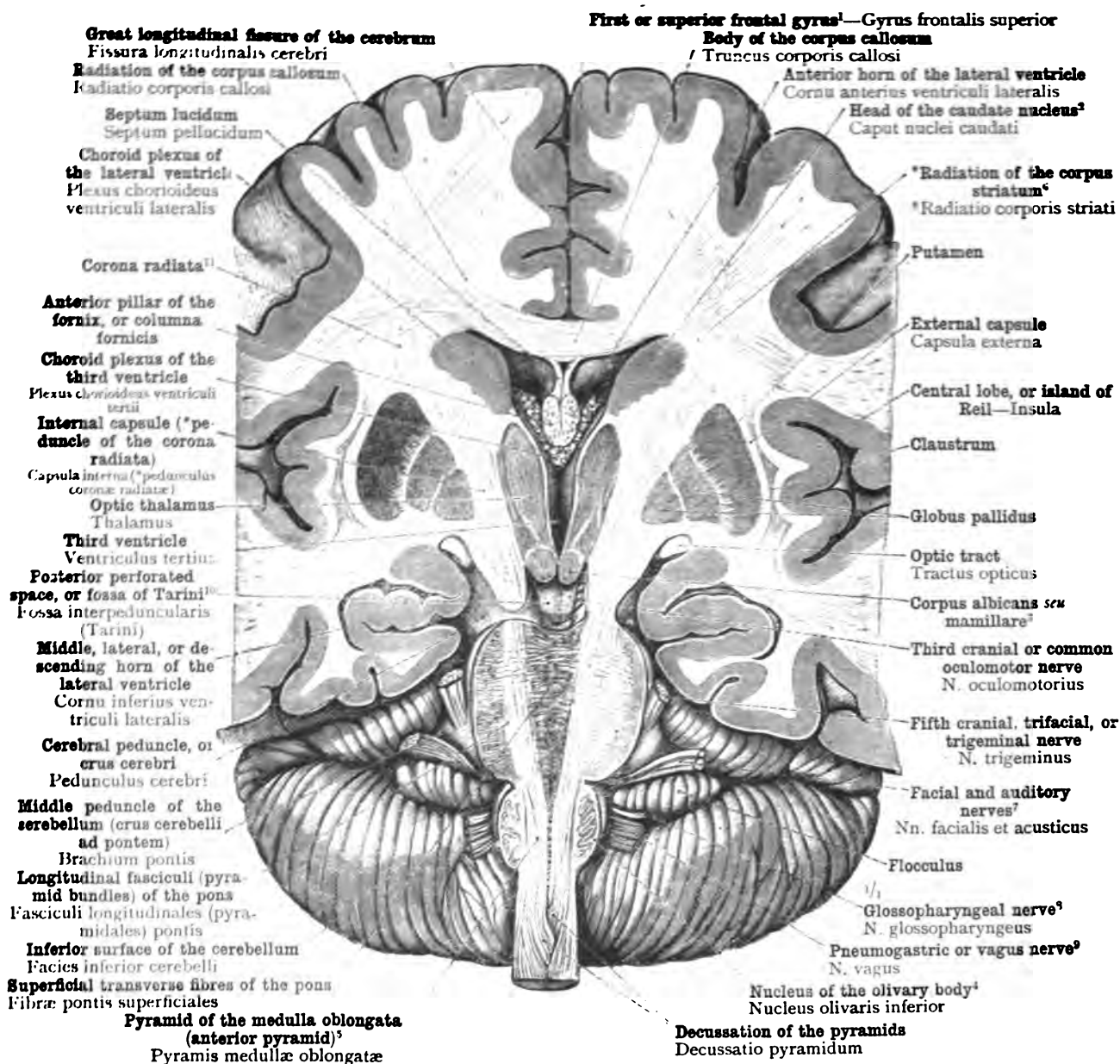


FIG. 1216.—TRANSVERSE SECTION THROUGH THE BRAIN IN THE DIRECTION OF THE MEDULLA OBLONGATA AND THE CEREBRAL PEDUNCLES OR CRURA CEREBRI. THE COURSE OF THE PYRAMIDAL TRACT FROM THE DECUSSATION OF THE PYRAMIDS UPWARDS, THROUGH THE PYRAMID OF THE MEDULLA OBLONGATA (ANTERIOR PYRAMID—see Appendix, note ³⁶³), THE PONS VAROLII, AND THE CRUSTA OF THE CEREBRAL PEDUNCLE OR CRUS CEREBRI, INTO THE INTERNAL CAPSULE, WHERE IT ENTERS THE *PEDUNCLE OF THE CORONA RADIATA, PEDUNCULUS CORONÆ RADIATÆ. IN THE MEDULLARY CENTRE OR WHITE MATTER OF THE CEREBRUM (MEDITULLIUM), WE SEE THE INTERLACEMENT OF THE RADIATION OF THE CORPUS CALLOSUM (RADIATIO CORPORIS CALLOSI) WITH THE FIBRES OF THE CORONA RADIATA AS THEY DIVERGE FROM THE INTERNAL CAPSULE, AND WITH THE FIBRES OF THE *RADIATION OF THE CORPUS STRIATUM (RADIATIO CORPORIS STRIATI—see Appendix, note ⁴⁰¹).

¹ See Appendix, note ⁷²⁸.

² See note ¹ to p. 766.

³ Also known as the bulb of the fornix.

⁴ Or (inferior) olivary nucleus; also known as the corpus dentatum of the olive. See Appendix, note ³⁸⁵.

⁵ See Appendix, note ⁷³.

⁶ See Appendix, note ⁴⁰¹.

⁷ In Soemmerring's enumeration, the facial is the seventh, the auditory the eighth cranial nerve; in that of Willis the former is the portio dura, the latter the portio mollis, of the seventh cranial nerve.

⁸ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.

⁹ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

¹⁰ See Appendix, note ⁴⁰².

¹¹ Or fibrous cone (Mayo).

Transverse Section through the Brain.

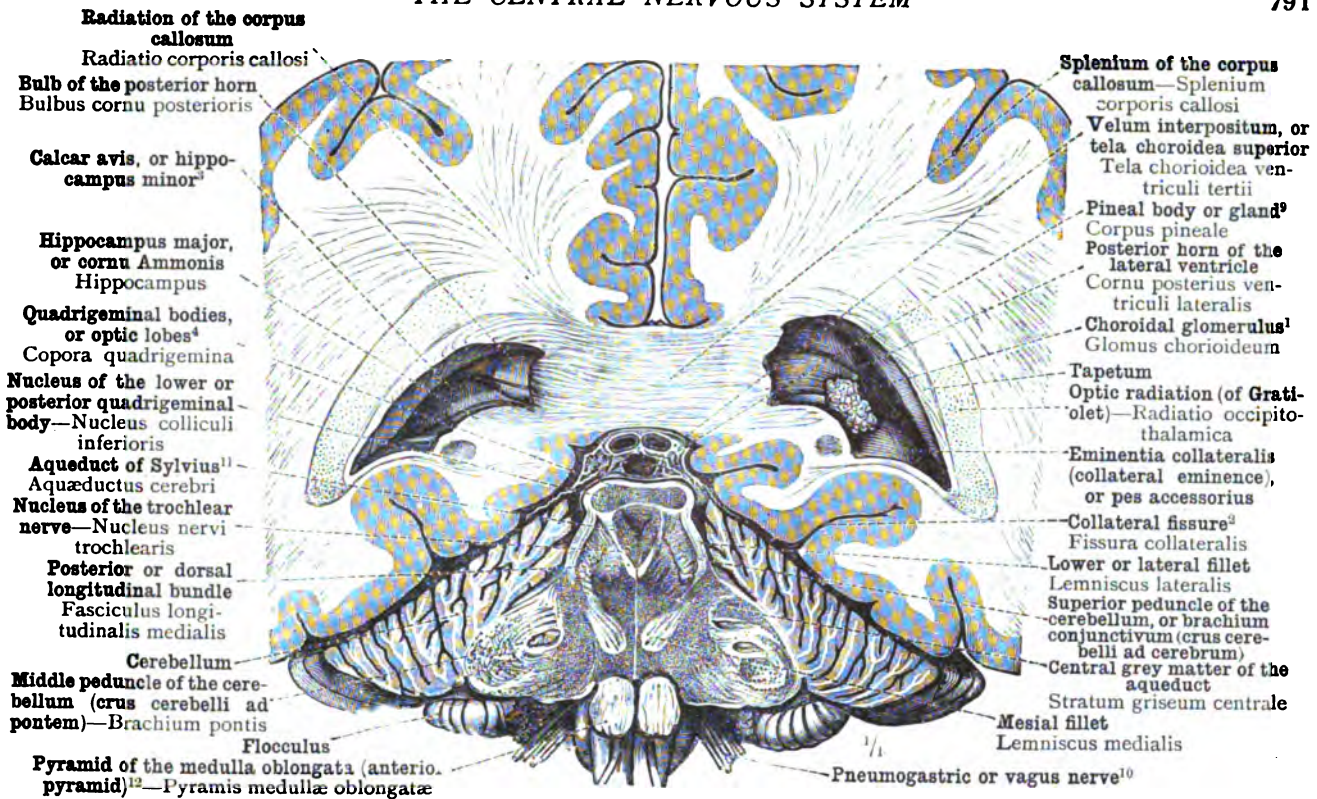


FIG. 1217.—CORONAL SECTION, PASSING BEHIND THE PONS VAROLII, THROUGH THE UPPER EXTREMITIES OF THE PYRAMIDS AND THROUGH THE SPLENIUM OF THE CORPUS CALLOSUM. ANTERIOR SURFACE OF POSTERIOR SEGMENT. A VIEW IS OBTAINED INTO THE POSTERIOR HORNS OF THE LATERAL VENTRICLES.

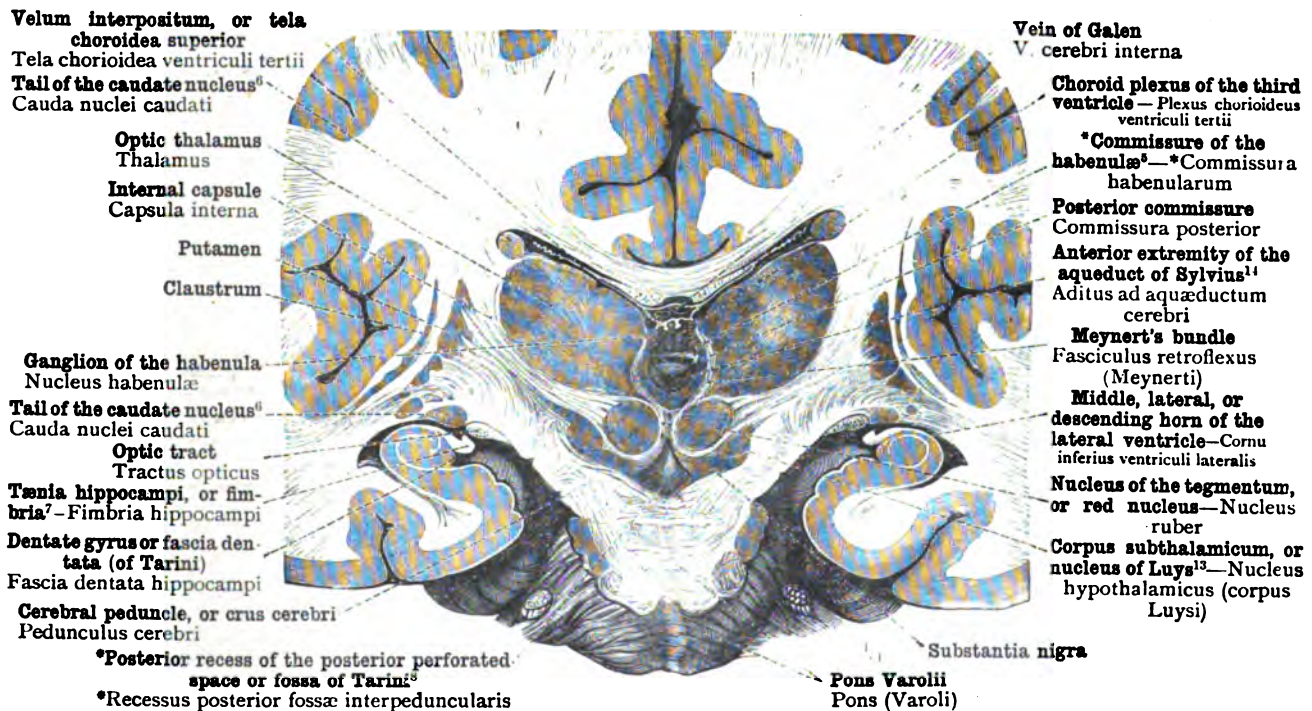


FIG. 1218.—CORONAL SECTION, PASSING THROUGH THE ANTERIOR PORTION OF THE PONS VAROLII, THE OPTIC THALAMI, AND THE POSTERIOR EXTREMITY OF THE LENTICULAR NUCLEUS. ANTERIOR SURFACE OF POSTERIOR SEGMENT. A VIEW IS OBTAINED OF THE POSTERIOR WALL OF THE THIRD VENTRICLE. THE CENTRAL PORTION OR BODY AND THE POSTERIOR HORN OF THE LATERAL VENTRICLE ARE CUT ACROSS BY THE SECTION.

¹ See note 3 to p. 781.

² Sometimes regarded as the fourth temporal sulcus.

³ Or *ergot* (Morand).

⁴ See note 5 to p. 760.

⁵ Middle of the upper or dorsal portion of the pedunculus conarii or habenula (Quain), or transverse frænulum of the pineal body (Macalister). See Appendix, note 365.

⁶ See note 1 to p. 766.

⁷ Called by Macalister the corpus fimbriatum. See Appendix, note 372.

⁸ See Appendix, note 362.

⁹ Known also as the conarium and as the epiphys cerebri. See Appendix, note 365.

¹⁰ Tenth cranial nerve in Semmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

¹¹ Or iter a tertio ad quartum ventriculum.

¹² See Appendix, note 363.

¹³ See Appendix, note 402.

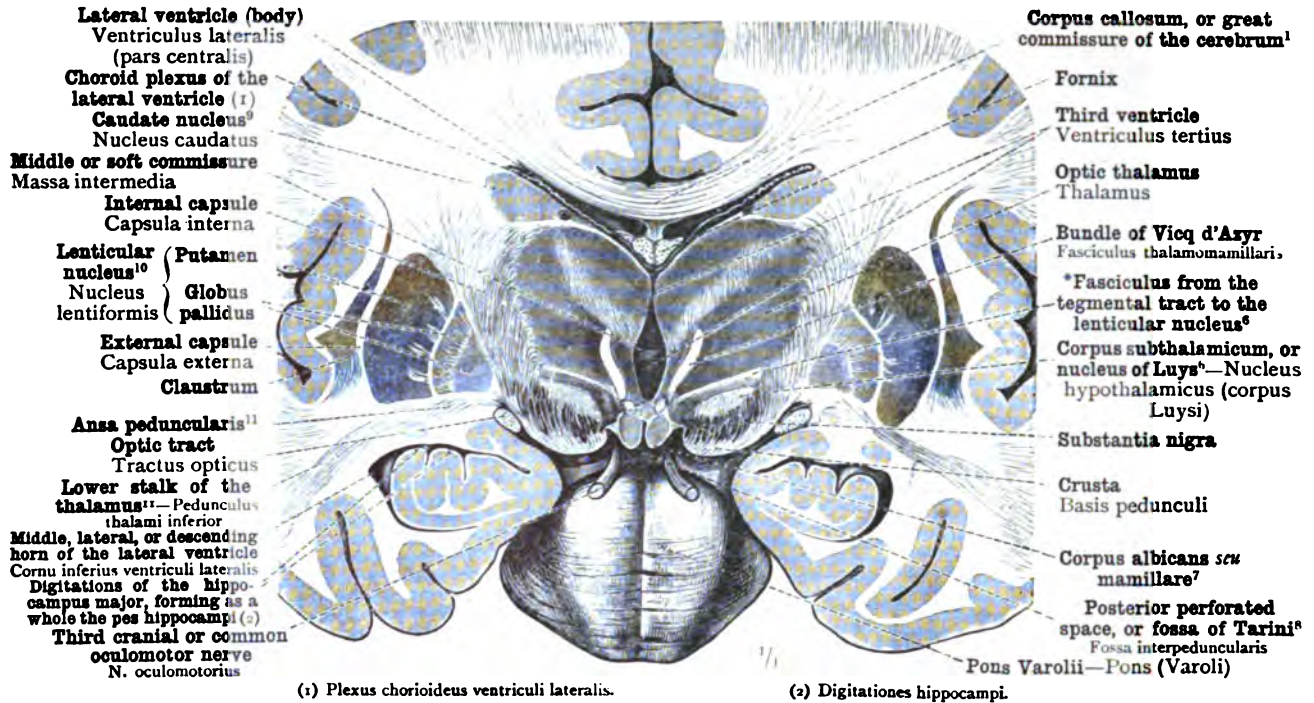


FIG. 1219.—CORONAL SECTION IN FRONT OF THE PONS, PASSING THROUGH THE CRURA CEREBRI OR CEREBRAL PEDUNCLES AND THE CORPORA MAMILLARIA SEU ALBICANTIA. ANTERIOR SURFACE OF POSTERIOR SEGMENT. THE THIRD VENTRICLE IS CUT ACROSS, ALSO THE BODY AND THE DESCENDING HORN OF THE LATERAL VENTRICLE; THE DESCENDING HORN IS DIVIDED CLOSE TO ITS ANTERIOR EXTREMITY.

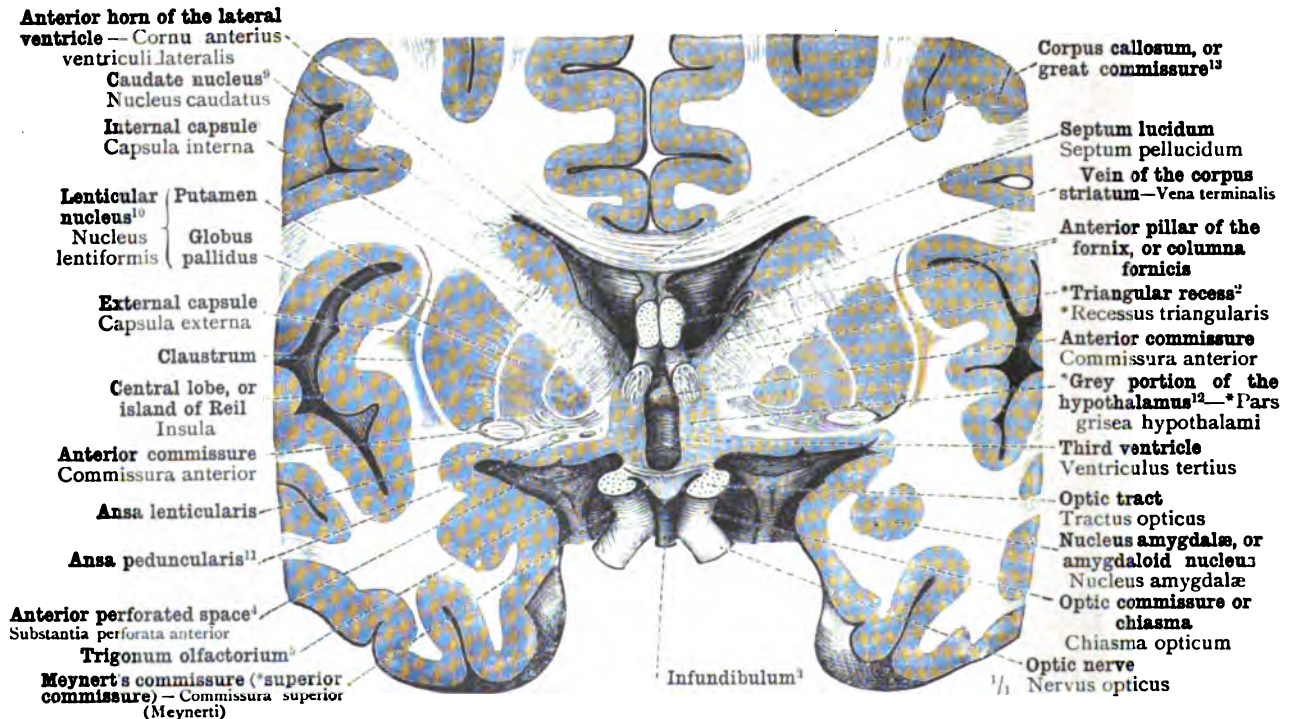


FIG. 1220.—CORONAL SECTION BEHIND THE OPTIC COMMISSURE OR CHIASSMA, PASSING THROUGH THE INFUNDIBULUM AND THE ANTERIOR PILLARS OF THE FORNIX OR COLUMNÆ FORNICIS. POSTERIOR SURFACE OF ANTERIOR SEGMENT. A VIEW IS OBTAINED OF THE INTERIOR OF THE ANTERIOR HORNS OF THE LATERAL VENTRICLES, AND THE ANTERIOR WALL OF THE THIRD VENTRICLE IS DISPLAYED.

¹ Formerly known as *trabs cerebri*.

² See Appendix, note 389.

³ See Appendix, note 361.

⁴ The grey matter forming the floor of the *anterior perforated space* is distinguished by the name of the *anterior perforated plate* or *lamina*.

⁵ See Appendix, note 366.

⁶ See Appendix, note 402.

⁷ Sometimes called the *bulb of the fornix*.

⁸ See Appendix, note 352.

⁹ Or *intraventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.

¹⁰ Or *extraventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.

¹¹ Quain uses the term *ansa peduncularis* and lower stalk of the *thalamus* as synonymous. Fig. 1219 shows that the two form a continuous strand of fibres.

¹² See Appendix, note 403.

¹³ Formerly called *trabs cerebri*.

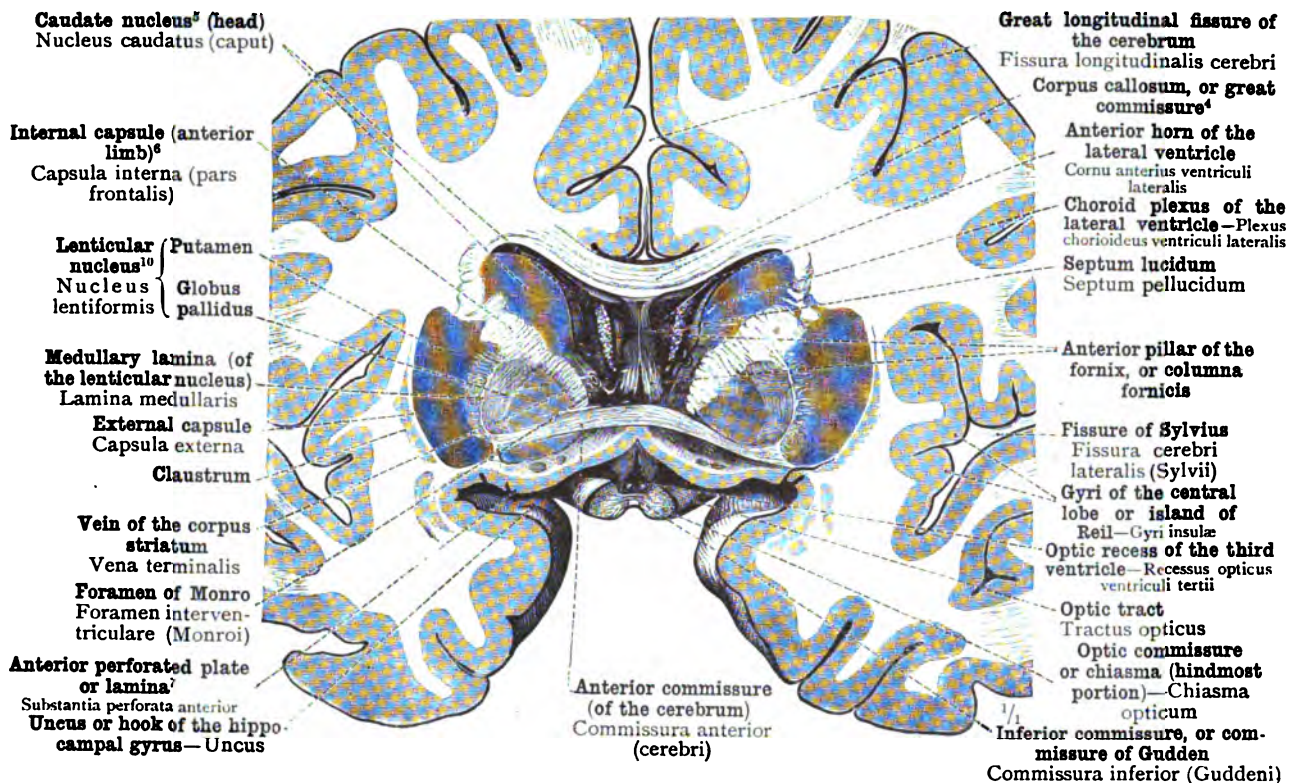


FIG. 1221.—CORONAL SECTION PASSING THROUGH THE OPTIC COMMISSURE OR CHIASSMA AND THROUGH THE ANTERIOR COMMISSURE OF THE CEREBRUM. ANTERIOR SURFACE OF POSTERIOR SEGMENT. A VIEW IS OBTAINED INTO THE THIRD VENTRICLE FROM BEFORE.

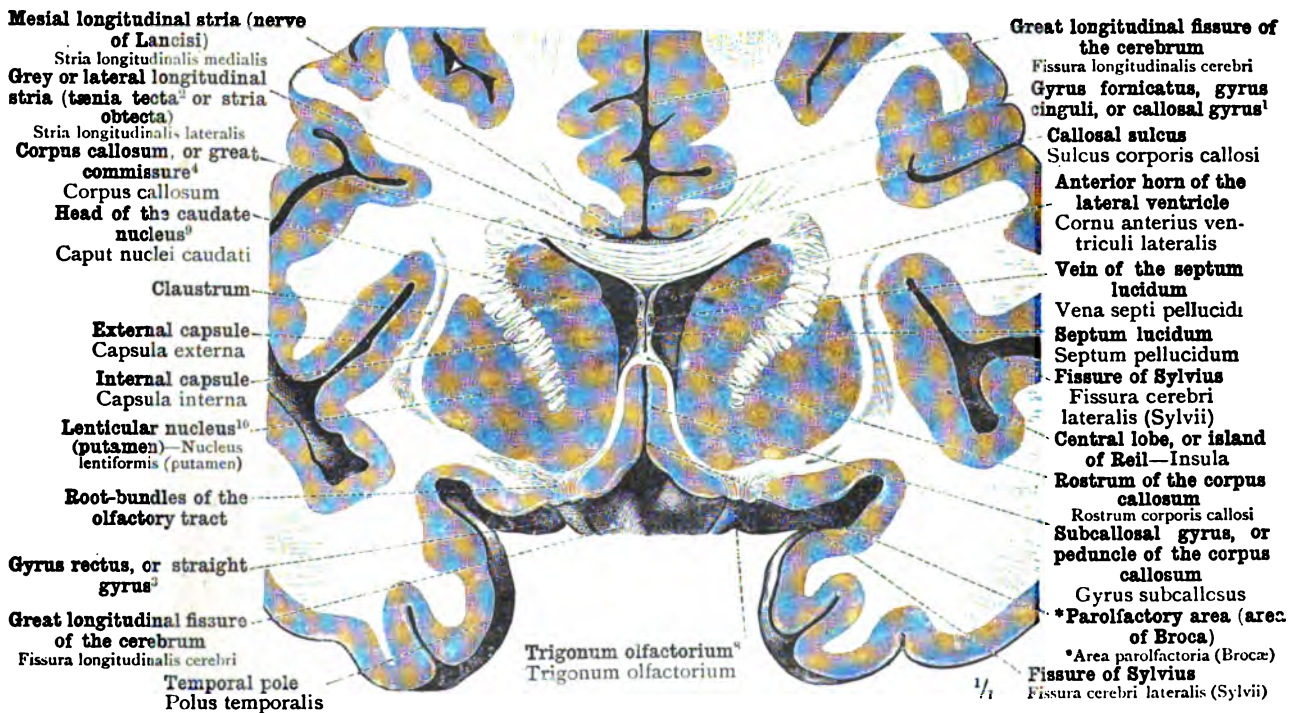


FIG. 1222.—CORONAL SECTION PASSING IN FRONT OF THE ANTERIOR COMMISSURE OF THE CEREBRUM AND THROUGH THE ANTERIOR EXTREMITIES OF THE CAUDATE AND LENTICULAR NUCLEI (see note ¹ to p. 766). POSTERIOR SURFACE OF ANTERIOR SEGMENT. A VIEW IS OBTAINED OF THE ANTERIOR WALLS OF THE ANTERIOR HORNS OF THE LATERAL VENTRICLES.

¹ See Appendix, note 399.

² See Appendix, note 392.

³ See Appendix, note 397.

⁴ Formerly called *trabs cerebri*.

⁵ Also called the *interventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.

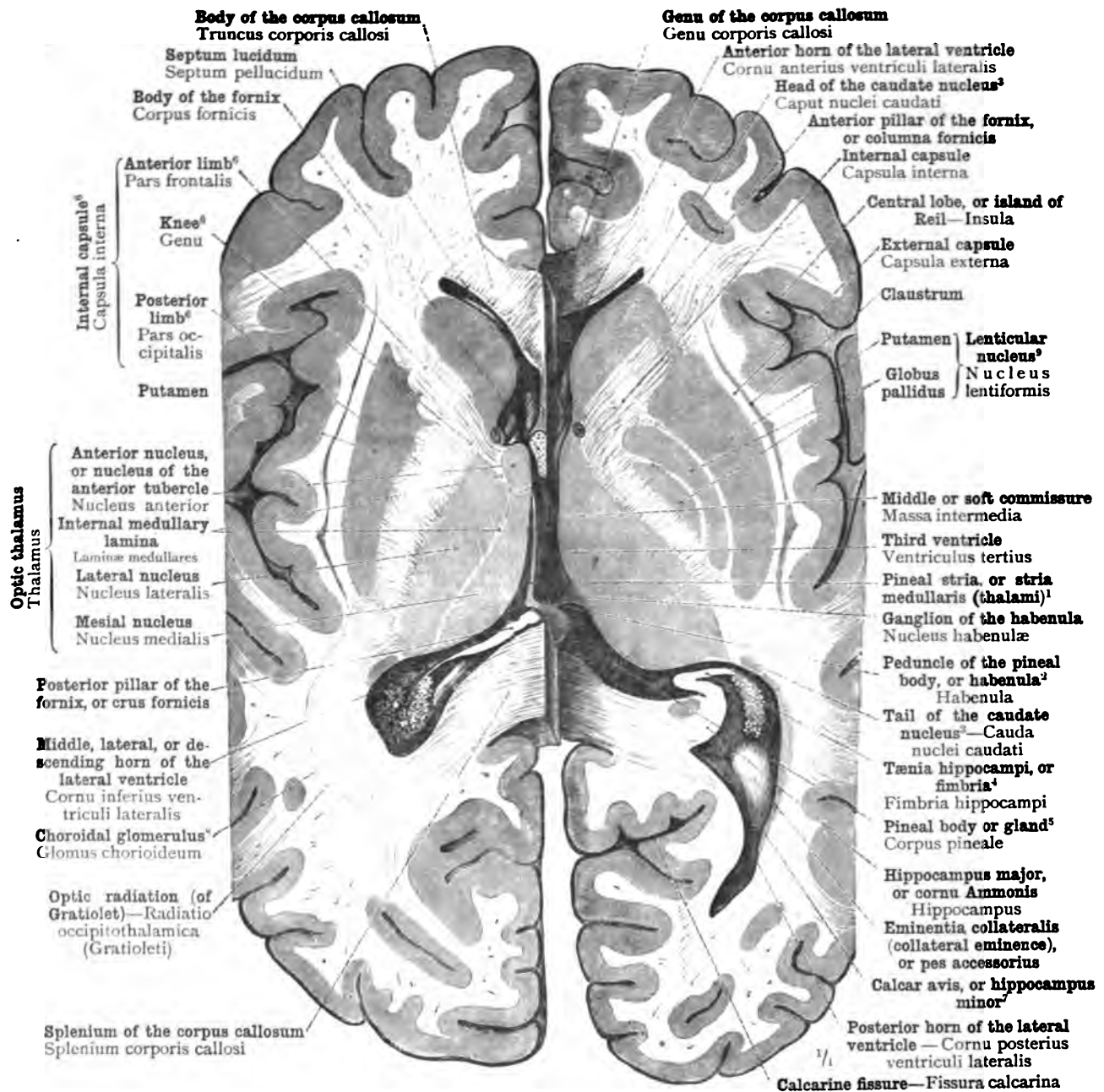
⁶ See Appendix, note 404.

⁷ I.e., the grey matter forming the floor of the *anterior perforated space*.

⁸ See Appendix, note 398.

⁹ See note ¹ to p. 766.

¹⁰ Also called the *extraventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.



¹ Also called *tænia fornicis*. See Appendix, notes 379 and 392.

² See Appendix, note 365.

³ See note ¹ to p. 766.

⁴ Called by Macalister the *corpus fimbriatum*. See Appendix, note 372.

⁵ Known also as the *conarium* and as the *epiphysis cerebri*. See Appendix, note 355.

⁶ See Appendix, note 404.

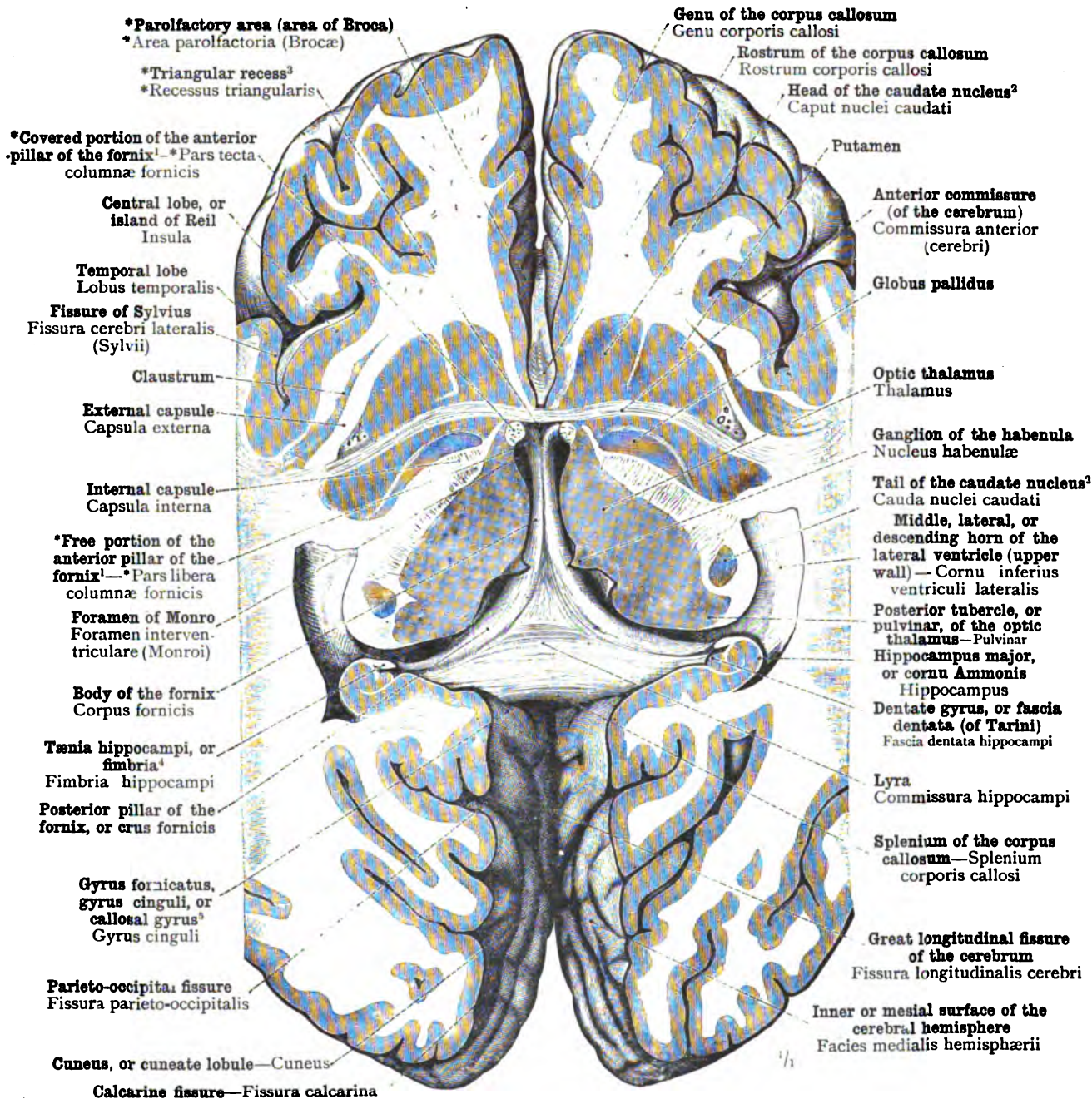
⁷ Or *ergot* (Morand).

⁸ See note 3 to p. 781.

⁹ Also called the *extraventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.

FIG. 1223.—ON THE RIGHT SIDE OF THE BRAIN THE PLANE OF SECTION IS ABOUT 1·5 CENTIMETRES (0·6 INCH) DEEPER THAN ON THE LEFT SIDE. WHILST, THEREFORE, ON THE LEFT SIDE THE OPTIC THALAMUS AND THE CAUDATE AND LENTICULAR NUCLEI ARE CUT ACROSS NEAR THEIR SUMMITS, ON THE RIGHT SIDE THESE BODIES ARE DIVIDED A LITTLE BELOW THE MIDDLE OF THEIR VERTICAL EXTENT, AND THE DIVISION OF THE LENTICULAR NUCLEUS INTO THREE ZONES IS DISPLAYED. ON THE LEFT SIDE THE COMMON ENTRANCE TO THE POSTERIOR AND MIDDLE (LATERAL OR DESCENDING) HORNS OF THE LATERAL VENTRICLE, WITH THE CHOROIDAL GLOMERULUS (see note ³ to p. 781), APPEARS IN THE PLANE OF SECTION, WHILST ON THE RIGHT SIDE THE POSTERIOR HORN IS DIVIDED ALONG ITS LONG AXIS, AND THE MIDDLE HORN IS CUT ACROSS OBLIQUELY. ON BOTH SIDES THE INTERNAL CAPSULE OF THE LENTICULAR NUCLEUS, CAPSULA LENTIS INTERNA, IS SEEN IN HORIZONTAL SECTION, ITS KNEE, GENU, AND ITS ANTERIOR AND POSTERIOR LIMBS, PARS FRONTALIS ET PARS OCCIPITALIS, BEING DISPLAYED (see Appendix, note 404). THE EXTERNAL CAPSULE OF THE LENTICULAR NUCLEUS, CAPSULA LENTIS EXTERNA, AND THE CLAUSTRUM ARE ALSO SHOWN. SEEN FROM ABOVE.

Horizontal Section through the Cerebrum.



¹ See Appendix, note 371.

² See note 1 to p. 766.

³ See Appendix, note 389.

⁴ Called by Macalister *corpus fimbriatum*. See Appendix, note 372.

⁵ See Appendix, note 370.

FIG. 1224.—THE PLANE OF THE SECTION IS THAT OF THE ANTERIOR COMMISSURE OF THE CEREBRUM, AND THE LOWER SURFACE OF THE UPPER SEGMENT IS DEPICTED, AS SEEN FROM BELOW. THE OPTIC THALAMI AND THE CAUDATE AND LENTICULAR NUCLEI ARE CUT ACROSS NEAR THEIR INFERIOR EXTREMITIES; THE LOWER FREE SURFACES OF THE FORNIX AND THE CORPUS CALLOSUM ARE DISPLAYED. THE HIPPOCAMPUS MAJOR OR CORNU AMMONIS IS CUT ACROSS ALMOST TRANSVERSELY NEAR ITS POSTERIOR EXTREMITY; PART OF THE UPPER WALL OF THE POSTERIOR HORN OF THE LATERAL VENTRICLE IS DISPLAYED. THE ANTERIOR COMMISSURE IS SHOWN IN ITS ENTIRE LENGTH, AND IS SEEN AT EITHER SIDE OF THE SECTION TO PASS INTO THE WHITE MATTER OR MEDULLARY CENTRE OF THE TEMPORAL LOBE.

Horizontal Section through the Cerebrum.

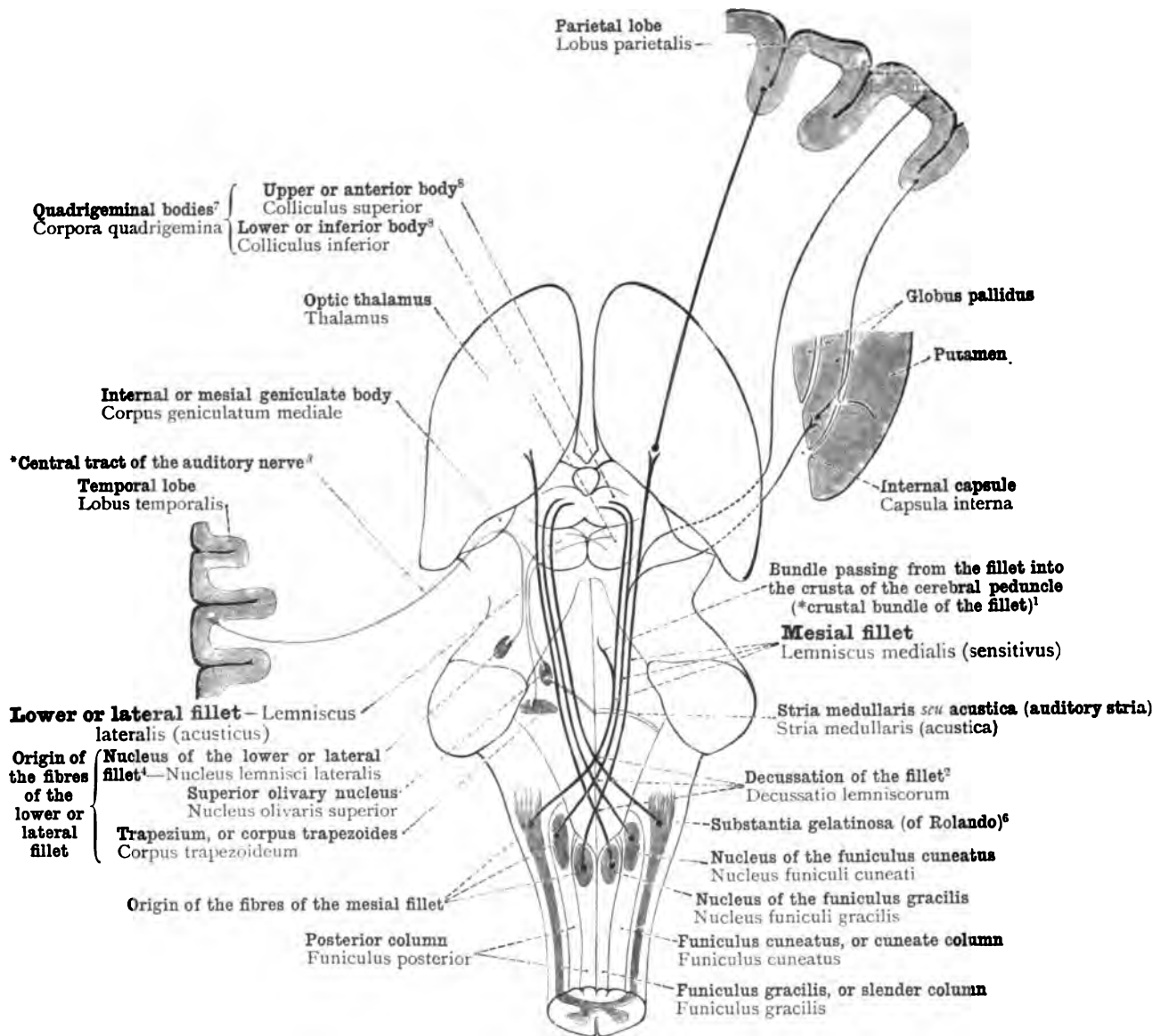


FIG. 1225.—DIAGRAMMATIC REPRESENTATION OF THOSE TRACTS OF THE POSTERIOR COLUMN OF THE SPINAL CORD WHICH REACH THE CEREBRUM WITHOUT PASSING THROUGH THE CEREBELLUM (TRACT OF THE FILLET, OR FILLET PORTION OF THE TEGMENTAL TRACT OR TEGMENTAL SYSTEM⁵). THE COURSE OF THE MESIAL FILLET IS INDICATED BY BLACK LINES, THAT OF THE LOWER OR LATERAL FILLET BY RED LINES.

Regarding the course of the fibres of the cerebral hemisphere, as displayed in Figs. 1225 to 1231, see Appendix, note ⁴⁰⁰.

¹ See Appendix, notes 397 and 405.

² See Appendix, note 394.

³ *Central Tract of the Auditory Nerve*.—In their account of the fillet, after describing the *triangle of the fillet* (*trigonum lemnisci*—see Appendix, note 399) and the so-called *nucleus of the fillet* (*Schleifenkern*—see Appendix, note 398), Von Langer and Toldt proceed as follows (*op. cit.*, p. 657): "The lateral fillet is reinforced by fibres proceeding from the auditory stria (*stria medullaris seu acustica*) of the opposite side. The indirect upward prolongation of these fibres passes through the brachium of the lower quadrigeminal body into the mesial geniculate body, and thence it is continued to the cortex of the temporal lobe. This is the *central tract of the auditory nerve* (*centrale Bahn des nervus acusticus*)." ⁴ See Appendix, note 398.

⁵ See Appendix, note 398.

⁶ See Appendix, note 372.

⁶ The grey matter of the *funiculus of Rolando*.

Decursus fibrarum cerebralium—The course of the fibres of the brain.

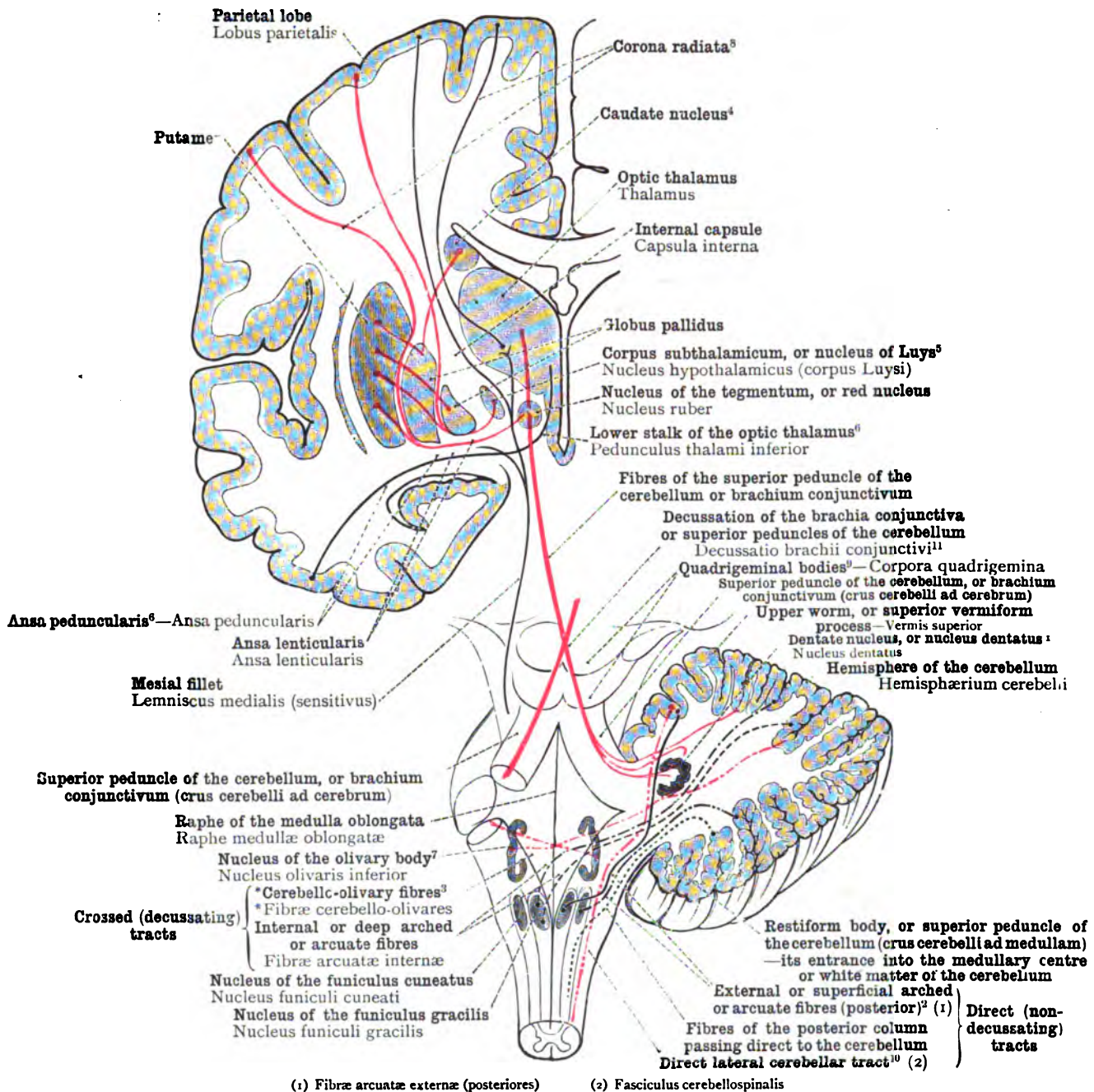


FIG. 1226.—DIAGRAMMATIC REPRESENTATION OF THOSE TRACTS OF THE POSTERIOR COLUMN OF THE SPINAL CORD WHICH PASS THROUGH THE RESTIFORM BODIES INTO THE CEREBELLUM OR PASS THROUGH THE CEREBELLUM ON THEIR WAY TO THE CEREBRUM (DORSAL OR CEREBELLAR PORTION OF THE TEGMENTAL TRACT—see Appendix, note ⁴⁰⁵), AND FIBRES PASSING DIRECT FROM THE POSTERIOR COLUMN TO THE CEREBELLUM. THE DIRECT LATERAL CEREBELLAR TRACT.

¹ Known also as the *corpus aentatum* or *corpus ciliare*.

² See Appendix, note 393.

³ See Appendix, note 395.

⁴ Also known as the *intraventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.

⁵ See Appendix, note 402.

⁶ See note ¹¹ to p. 792.

⁷ Or (*inferior*) *olivary nucleus*; also known as the *corpus dentatum of the olive*. See Appendix, note 385.

⁸ Or *fibrous cone* (Mayo).

⁹ See note 5 to p. 760.

¹⁰ See Appendix, note 344.

¹¹ See note ¹¹ to p. 772.

Decursus fibrarum cerebralium—The course of the fibres of the brain.

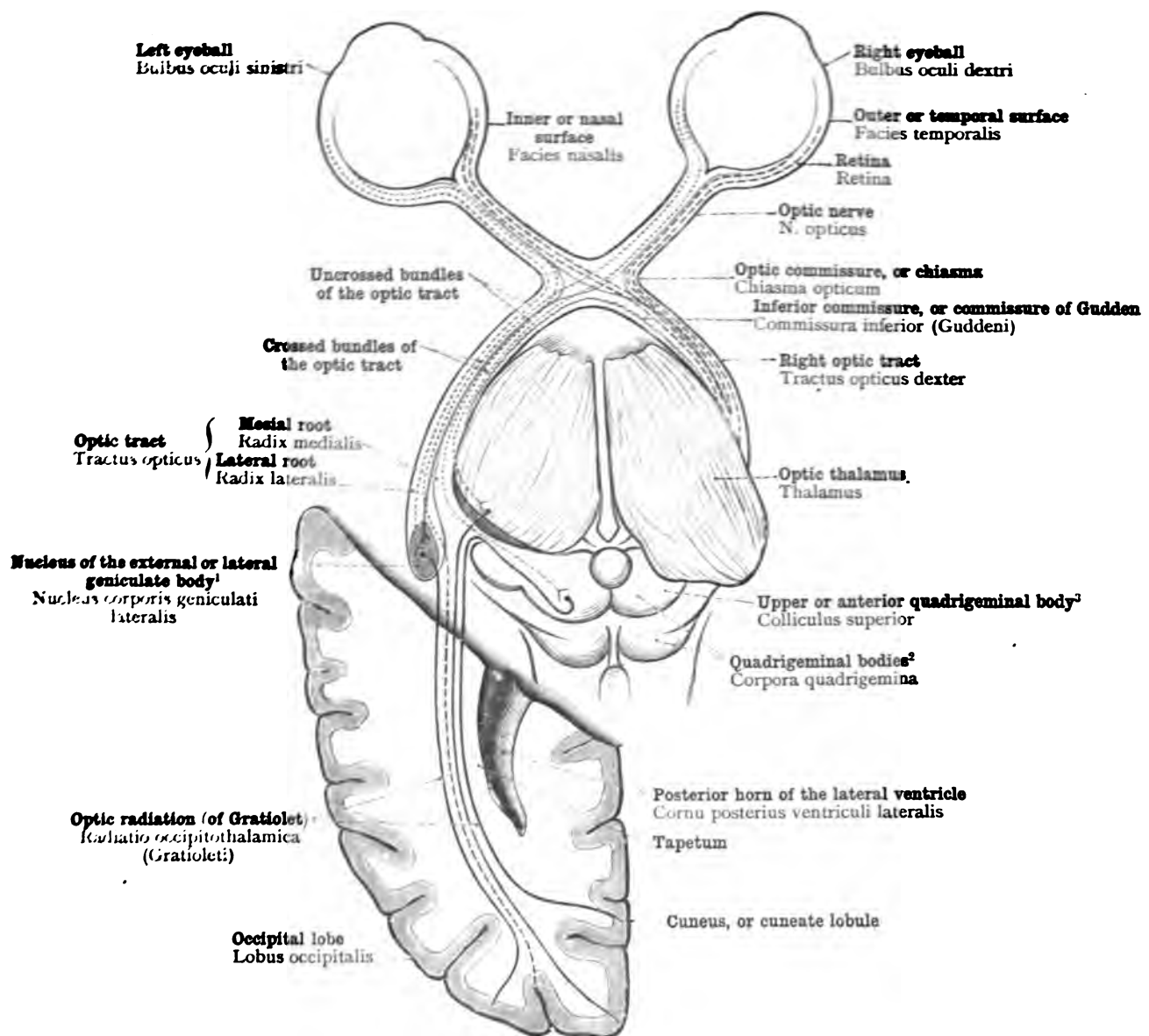
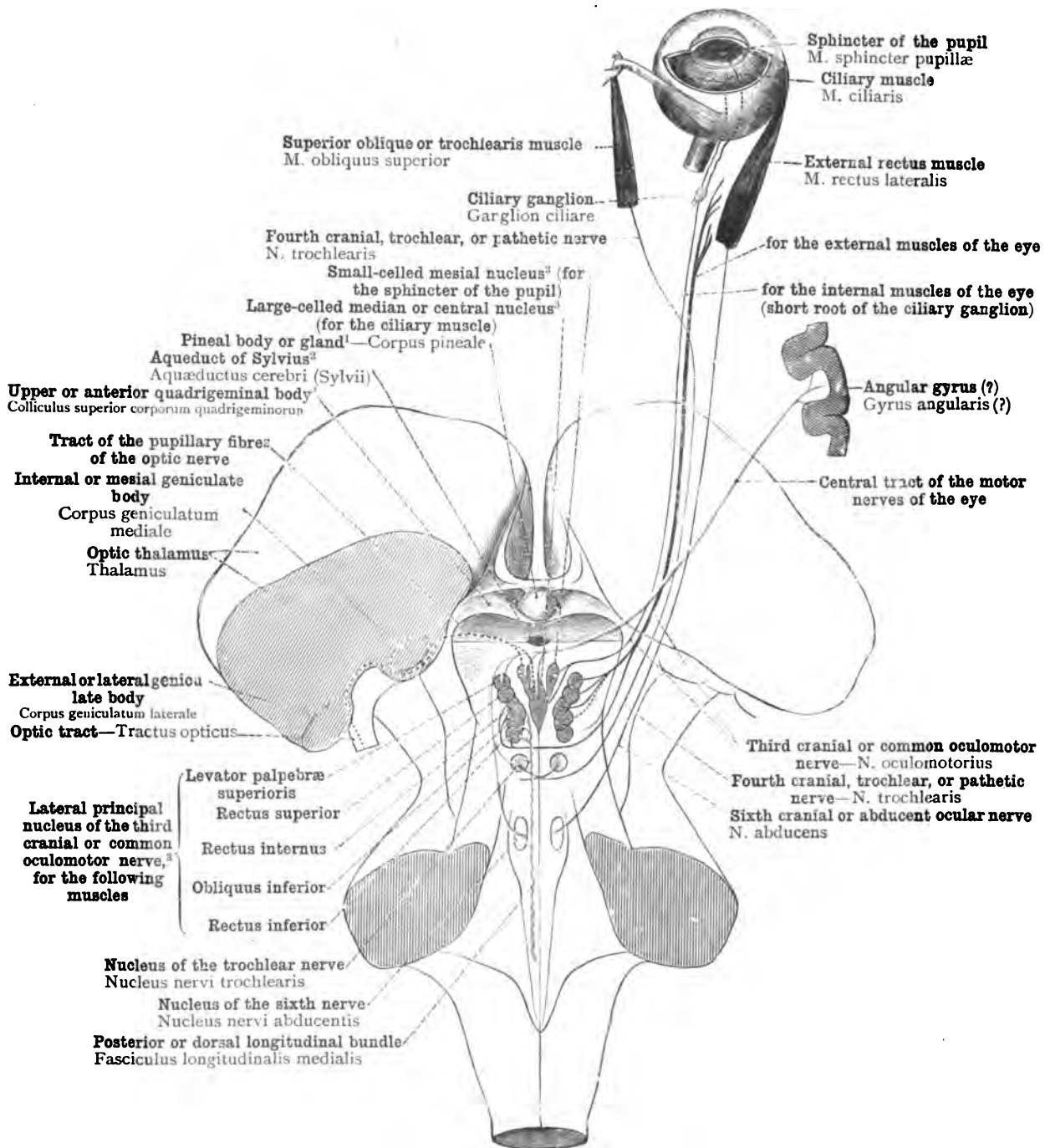
¹ See note 9 to p. 789.² See note 5 to p. 760³ See Appendix, note 372.

FIG. 1227.—DIAGRAMMATIC REPRESENTATION OF THE COURSE OF THE FIBRES OF THE OPTIC NERVE THROUGH THE OPTIC COMMISSURE OR CHIASSMA, AND OF THE CENTRAL PATHS OF CONDUCTION OF VISUAL IMPULSES. THE FASCICULI PROCEEDING FROM THE MACULA LUTEA, SOME OF WHICH ARE CROSSED AND SOME UNCROSSED, ARE INDICATED BY RED LINES.

Decursus fibrarum cerebralium—The course of the fibres of the brain.

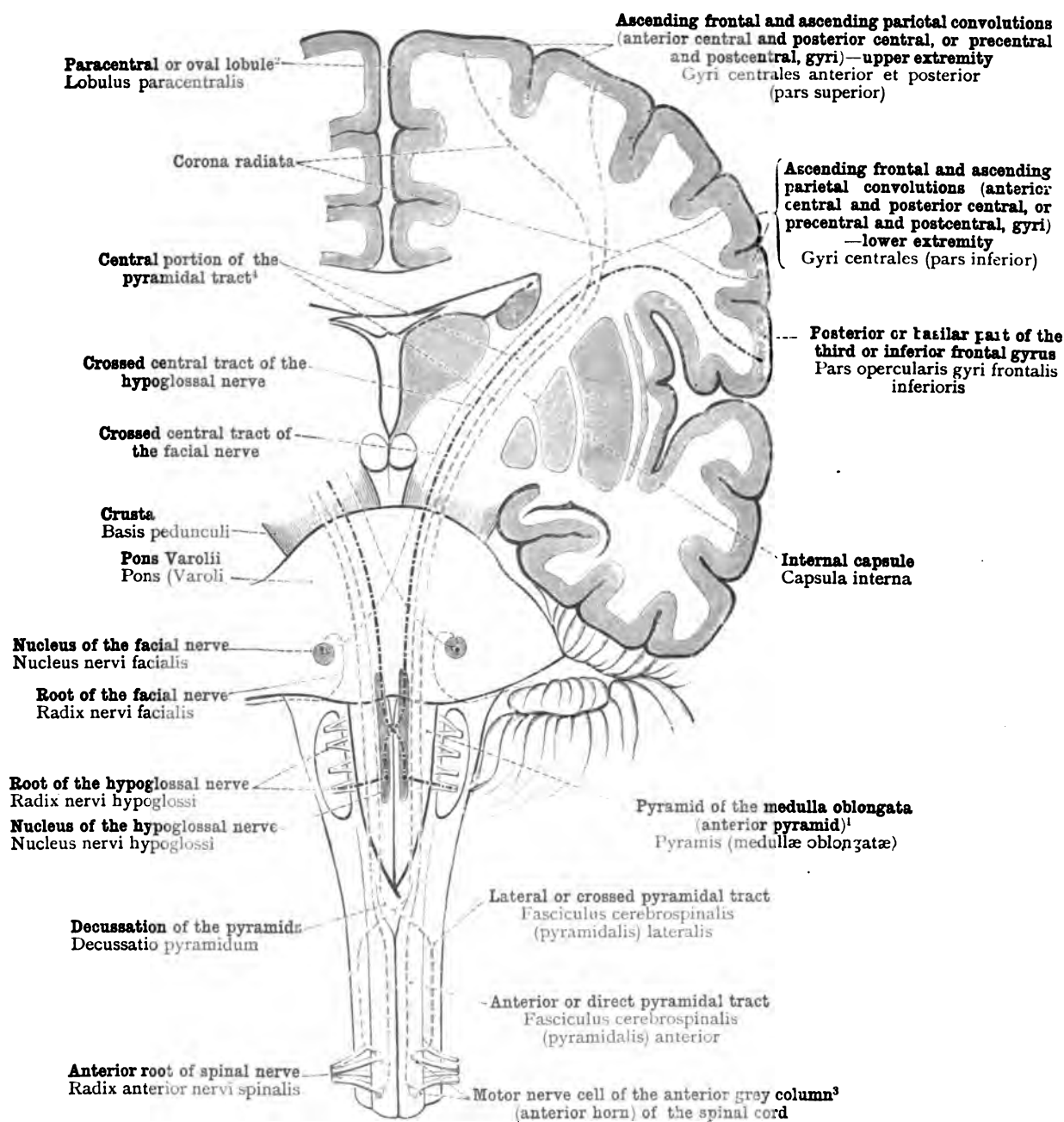


¹ Known also as the *conarium* and as the *epiphysis cerebri*. See Appendix, note ³⁶⁵.
³ See Appendix, note ⁴⁰⁷.

² Or *iter a tertio ad quartum ventriculum*.
⁴ See Appendix, note ³⁷².

FIG. 1228.—NUCLEI OF ORIGIN OF THE COMMON OCULOMOTOR AND TROCHLEAR NERVES IN THE MID-BRAIN OR MESENCEPHALON; THEIR CENTRAL TRACT (BLUE), THEIR INTERCONNECTIONS EACH WITH THE OTHER (RED), AND THEIR CONNECTIONS WITH THE NUCLEUS OF THE SIXTH CRANIAL OR ABDUCENT OCULAR NERVE THROUGH THE POSTERIOR OR DORSAL LONGITUDINAL BUNDLE (RED). THE DIVISION OF THE NUCLEUS OF THE THIRD CRANIAL OR COMMON OCULOMOTOR NERVE INTO THE LATERAL PRINCIPAL NUCLEUS, THE SMALL-CELLED MESIAL NUCLEUS, AND THE LARGE-CELLED MEDIAN OR CENTRAL NUCLEUS (see Appendix, note ⁴⁰⁷); THE LOCALIZATION OF THE SEVERAL GROUPS OF FIBRES OF THE THIRD NERVE IN THIS NUCLEAR REGION. THE CENTRAL COURSE OF THE SO-CALLED PUPILLARY FIBRES OF THE OPTIC NERVE (REFLEX ARC FOR THE CONTRACTION OF THE PUPIL).

The diagram is based on the researches of Bernheimer.



¹ See Appendix, note 363.
³ See Appendix, note 339.

² See Appendix, note 333.
⁴ See Appendix, note 406.

FIG. 1229.—THE PYRAMIDAL TRACT (RED) AND THE ASSOCIATED CENTRAL TRACTS OF THE HYPOGLOSSAL AND FACIAL NERVES. DIAGRAMMATIC.

Decursus fibrarum cerebralium—The course of the fibres of the brain.

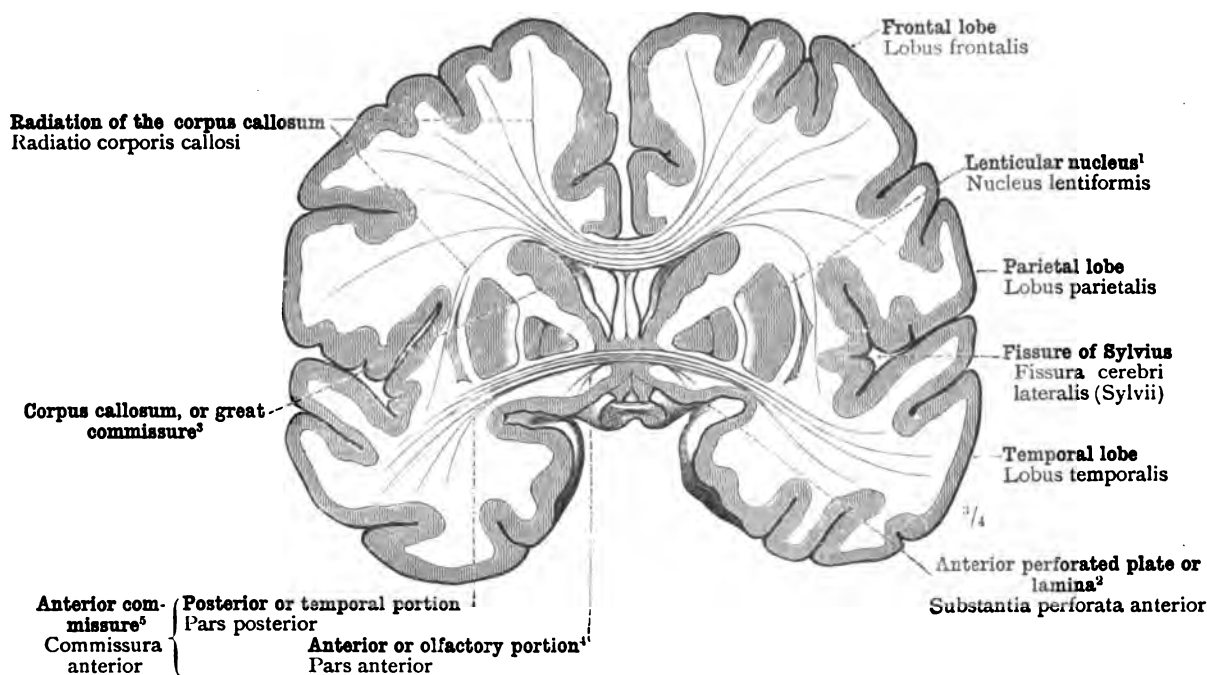


FIG. 1230.—DIAGRAMMATIC REPRESENTATION OF THE TWO PRINCIPAL COMMISSURES OF THE CEREBRUM (see *Appendix*, note ⁴⁰⁶): THE CORPUS CALLOSUM OR GREAT COMMISSURE WITH ITS RADIATION; AND THE ANTERIOR COMMISSURE, WITH ITS ANTERIOR OR OLFACTORY PORTION, CONNECTED WITH THE FRONTAL LOBE, AND ITS POSTERIOR OR TEMPORAL PORTION, RADIATING INTO THE TEMPORAL LOBE. (See *Appendix*, note ⁴⁰⁸.)

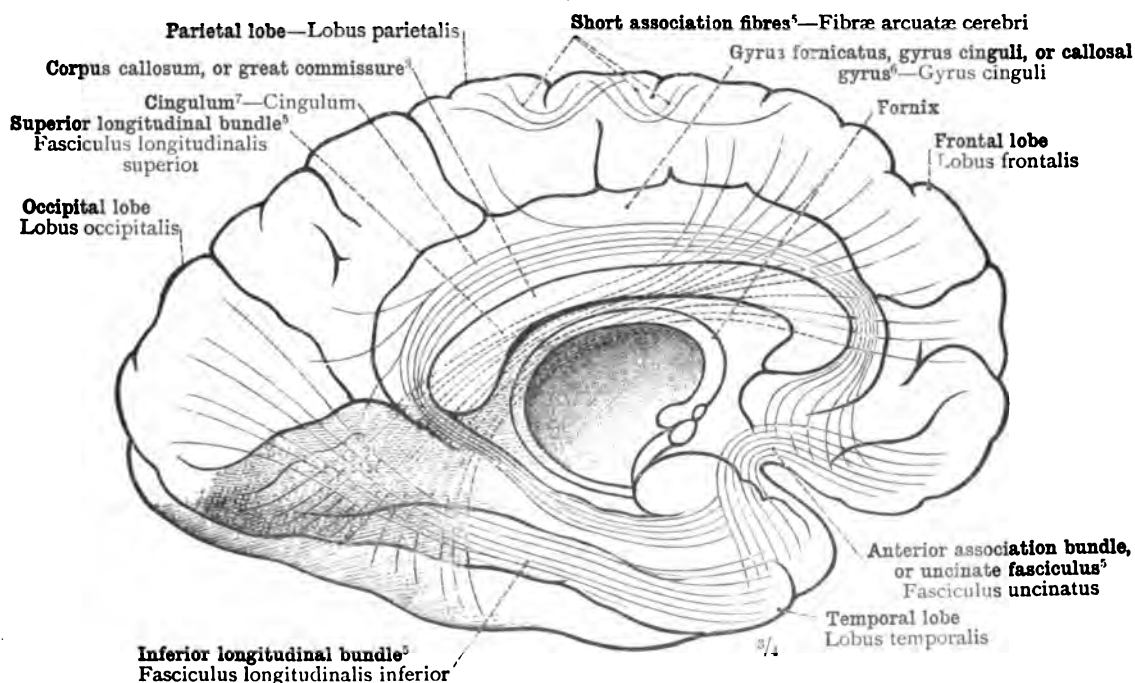
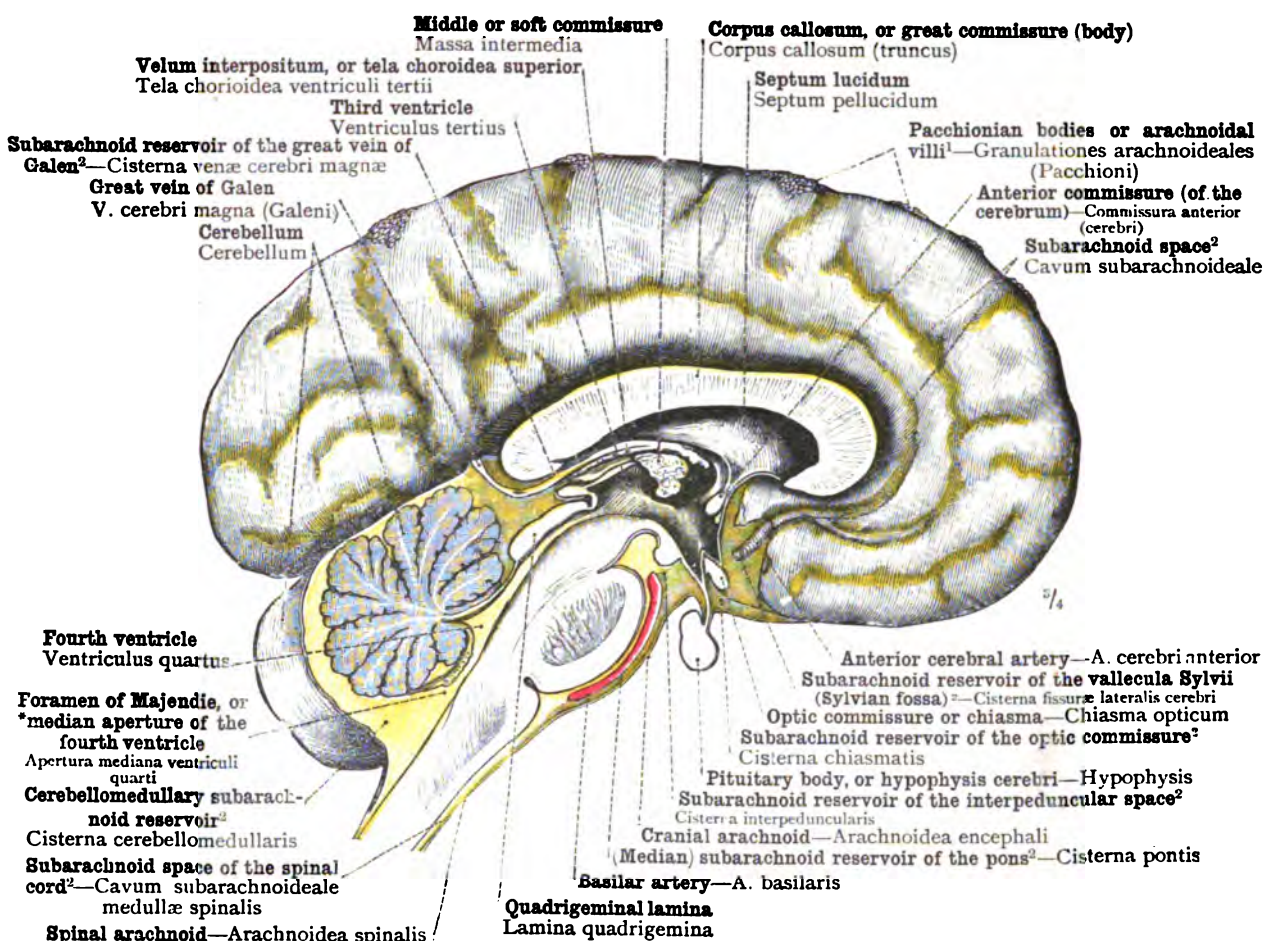


FIG. 1231.—THE PRINCIPAL BUNDLES OF ASSOCIATION FIBRES (see *Appendix*, note ⁴⁰⁶) OF THE MEDULLARY CENTRE OF THE CEREBRAL HEMISPHERE, SHOWN IN DIAGRAMMATIC PROJECTION ON THE MESIAL SURFACE OF THE HEMISPHERE.

¹ Also known as the *extraventricular portion* (or *nucleus*) of the *corpus striatum*. See note ¹ to p. 766.
² Forming the floor of the *anterior perforated space*.
³ Formerly known as the *trabs cerebri*. See *Appendix*, note ⁴⁰⁶.
⁴ See *Appendix*, note ⁴⁰⁸.
⁵ See *Appendix*, note ⁴⁰⁶.
⁶ See *Appendix*, note ³⁹⁹.
⁷ Also known as the *fillet* of the *corpus callosum* and as the *covered band* of *Reil*. See *Appendix*, note ⁴⁰⁶.



¹ Known also as *Pacchionian glands* or *Pacchionian granulations*.

² See Appendix, note 499.

FIG. 1232.—THE CRANIAL ARACHNOID, ARACHNOIDEA ENCEPHALI, AND THE SUBARACHNOID SPACE, CAVUM SUBARACHNOIDEALE, WITH ITS VARIOUS SUBDIVISIONS AND RESERVOIRS, AS SEEN IN A MEDIAN SAGITTAL SECTION OF THE BRAIN. THE PACCHIONIAN BODIES OR ARACHNOIDAL VILLI, GRANULATIONES ARACHNOIDEALES (see note ¹ above).

The subarachnoid space has been filled with coloured gelatine, and appears in some places somewhat more distended than in the normal condition.

Meninges encephali—The membranes of the brain.

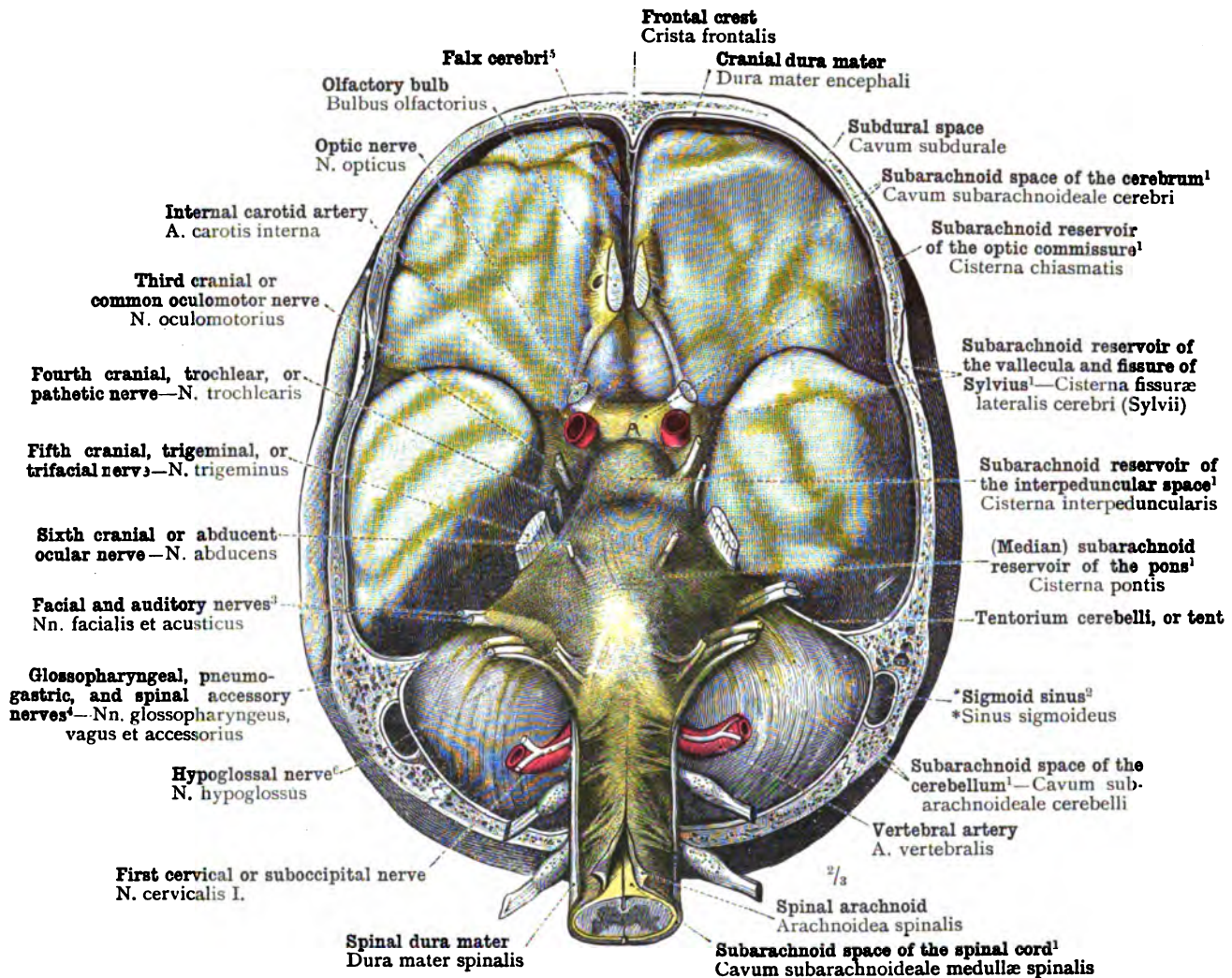


FIG. 1233.—THE CRANIAL ARACHNOID, ARACHNOIDEA ENCEPHALI; FORM AND EXTENT OF THE SUBARACHNOID SPACE, CAVUM SUBARACHNOIDEALE (WHICH HAS BEEN INJECTED WITH GELATINE), ON THE BASAL ASPECT OF THE BRAIN, AND, MORE ESPECIALLY, THE RELATIONS OF THIS SPACE TO THE ROOTS OF THE CRANIAL NERVES.

The gelatine was injected before the head was opened, and the head was then hardened entire in formalin solution. Subsequently the base of the skull and the cervical vertebræ were carefully removed with saw and chisel and the dura mater was dissected off. In the region of the spinal cord the arachnoid was divided for a short distance by a median incision, and the subarachnoid space of the spinal cord was thus opened. Between the arachnoid and the dura mater where that membrane has been preserved in apposition with the calvaria, the subdural space of the brain is visible.

¹ See Appendix, note 409.

² See Appendix, note 410.

³ The facial nerve is the seventh cranial nerve in Soemmerring's enumeration; the *portio dura* of the seventh in that of Willis. The auditory nerve is the eighth cranial nerve in Soemmerring's enumeration; the *portio mollis* of the seventh in that of Willis.

⁴ The glossopharyngeal is the ninth, the pneumogastric or vagus the tenth, and the spinal accessory the eleventh cranial nerve in Soemmerring's enumeration; they are respectively the first, second, and third trunks of the eighth cranial nerve in that of Willis.

⁵ Sometimes called the *falx major*.

⁶ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; known also as the lingual motor nerve.

Meninges encephali—The membranes of the brain.

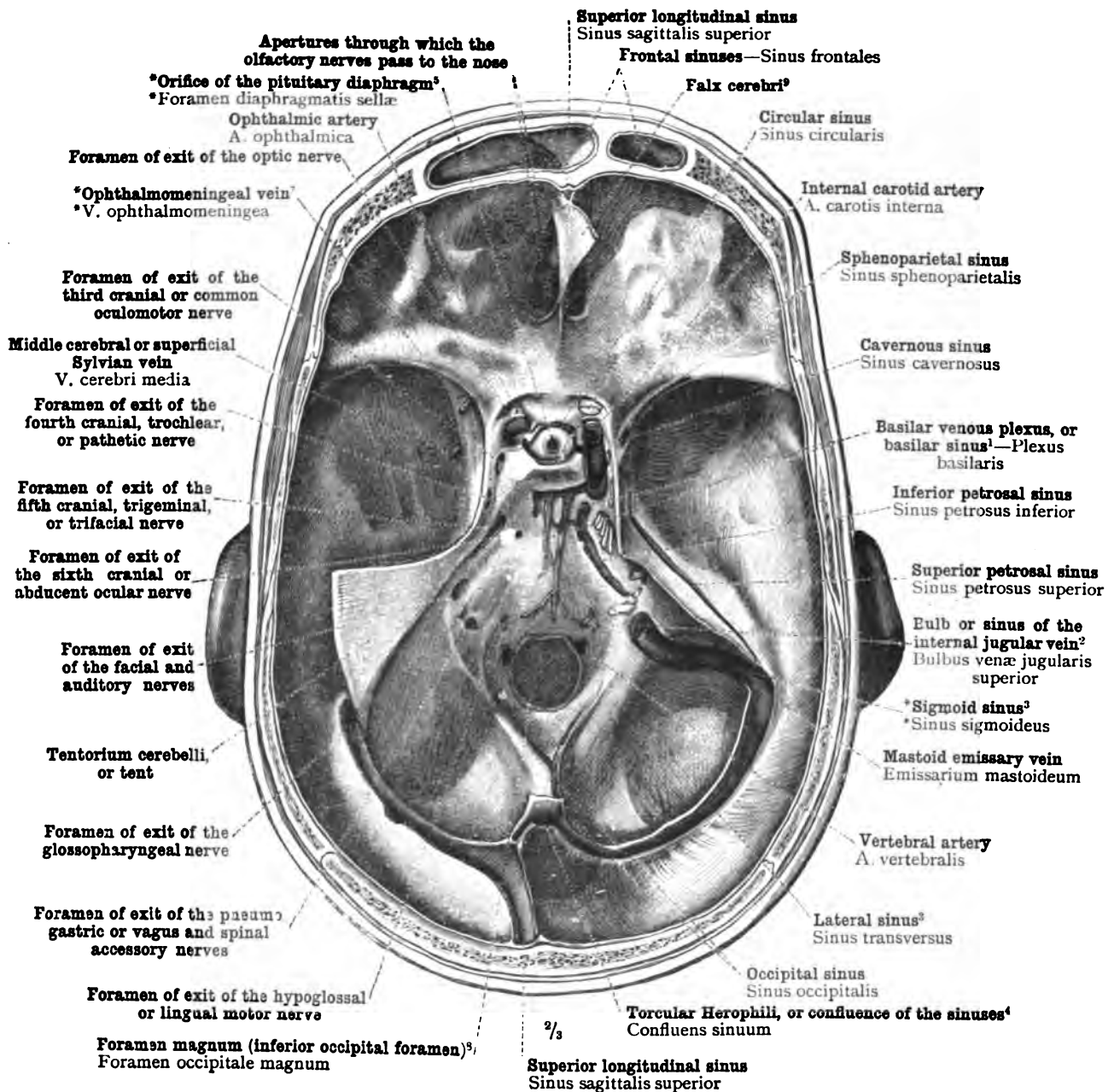


FIG. 1234.—THE CRANIAL DURA MATER, DURA MATER ENCEPHALI, WITH THE SINUSES OF THE DURA MATER (VENOUS SINUSES OF THE CRANIUM, MENINGEAL SINUSES); SINUS DURÆ MATRIS, ON THE INTERNAL SURFACE OF THE BASE OF THE SKULL. ON THE LEFT SIDE THE FORAMINA OF EXIT⁶ OF THE CRANIAL NERVES THROUGH THE DURA MATER ARE DISPLAYED; ON THE RIGHT SIDE THE ROOTS OF THESE NERVES ARE DISPLAYED AS THEY ARE ABOUT TO PERFORATE THE DURA MATER.

The tentorium cerebelli, or tent, has for the most part been removed; only on the left side has a small portion of this structure been preserved, and this remnant has been turned forwards along its line of attachment to the superior border (or angle) of the petrous portion of the temporal bone. Most of the sinuses have been opened.

¹ Sometimes known as the *transverse sinus*. The *basilar venous plexus* must be carefully distinguished from the *basilar* or *basal vein*, *vena basalis Rosenthalii* (shown in Fig. 1202, p. 784). See Appendix to Part V., notes 220 and 297.

² See Appendix to Part V., note 121.

³ See Appendix, note 410.

⁴ See Appendix to Part V., note 266.

⁵ See Appendix, note 411.

⁶ *Foramina of Exit*.—The term *foramen of exit* is employed as the most suitable English equivalent of the German *Austrittsöffnung* or *Durchtrittsöffnung*. The words "*through the dura mater*" are to be understood when not expressed.

⁷ *Ophthalmomeningeal vein*.—The vein thus named by the author is a communicating branch between the *superior ophthalmic vein* and the *middle cerebral or superficial Sylvian vein*.

⁸ See Appendix, note 412.

⁹ Sometimes called the *falx major*.

Meninges encephali—The membranes of the brain.

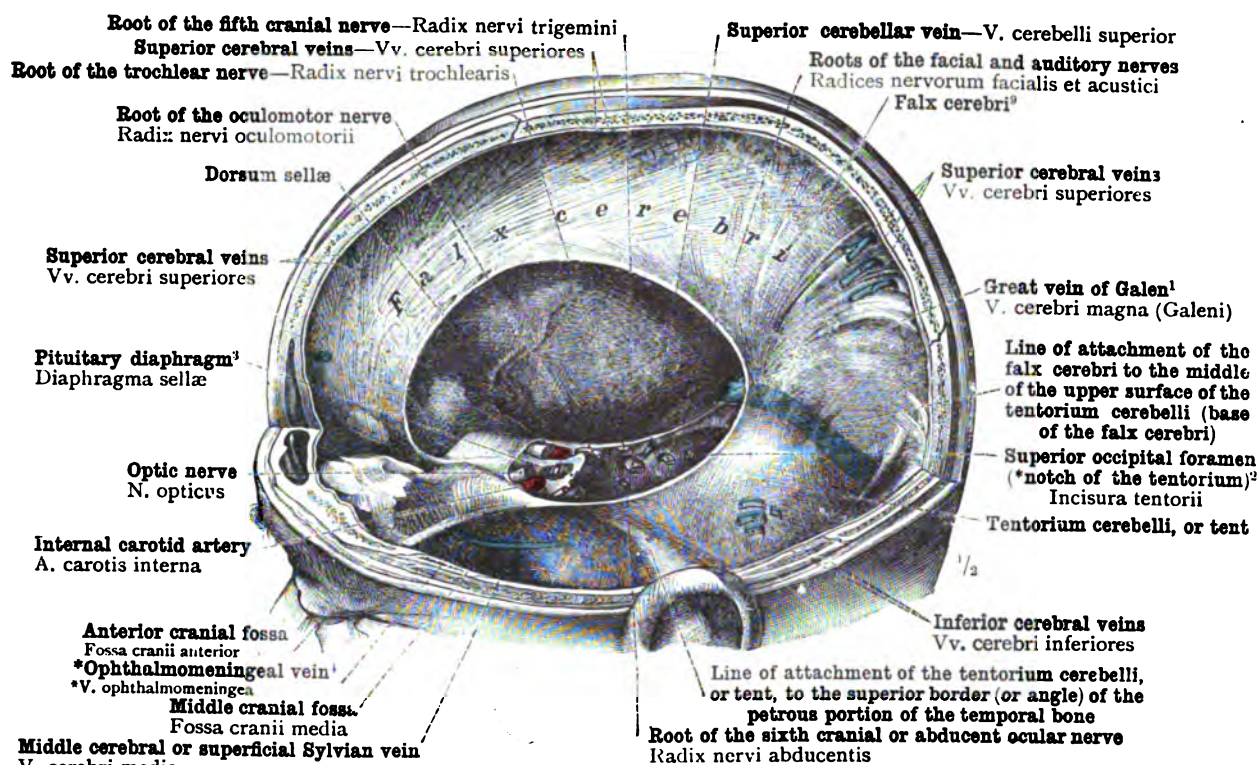


FIG. 1235.—THE FALX CEREBRI AND THE TENTORIUM CEREBELLI, OR TENT, SEEN FROM THE LEFT SIDE. THE TRUNKS OF THE CEREBRAL VEINS THAT OPEN INTO THE VENOUS SINUSES OF THE CRANIUM.

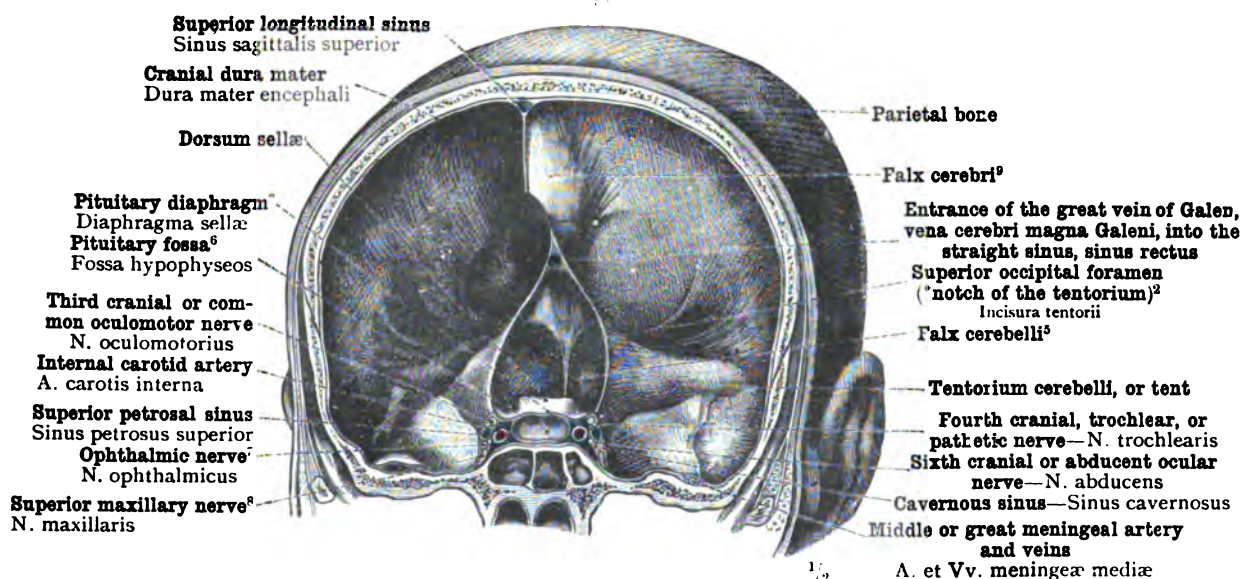


FIG. 1236.—THE TENTORIUM CEREBELLI, OR TENT, THE POSTERIOR PORTION OF THE FALX CEREBRI (FALX MAJOR), AND THE FALX CEREBELLI (FALX MINOR), AS SEEN FROM BEFORE IN A CORONAL SECTION OF THE HEAD. THE SECTION PASSES THROUGH THE PITUITARY FOSSA (see note ² to p. 60, in Part I.) AND THE CAVERNOUS SINUSES IMMEDIATELY BEHIND THE PITUITARY BODY OR HYPOPHYSIS CEREBRI; IN ADDITION, THEREFORE, TO THE STRUCTURES JUST MENTIONED, THE FOLLOWING ARE ALSO DISPLAYED: WITHIN THE CAVITY OF THE CAVERNOUS SINUS, THE INTERNAL CAROTID ARTERY AND THE SIXTH CRANIAL OR ABDUCENT OCULAR NERVE; AND IN THE OUTER WALL OF THE CAVERNOUS SINUS, THE THIRD CRANIAL OR COMMON OCULOMOTOR NERVE, THE FOURTH CRANIAL, PATHETIC, OR TROCHLEAR NERVE, THE OPHTHALMIC NERVE (FIRST DIVISION OF THE FIFTH), AND THE SUPERIOR MAXILLARY NERVE (SECOND DIVISION OF THE FIFTH CRANIAL NERVE).

¹ Continued posteriorly into the straight sinus, which is visible in Fig. 1235 through the dura mater along the base of the falx cerebri.

² See Appendix, note 412.

³ By Quain called the operculum or tentorium of the hypophysis. See Appendix, note 411.

⁴ See note 7 to p. 804.

⁵ Sometimes called the falx minor.

⁶ See note 2 to p. 60, in Part I.

⁷ Or first division of the fifth cranial, trigeminal, or trifacial nerve.

⁸ Or second division of the fifth cranial, trigeminal, or trifacial nerve.

⁹ Sometimes called the falx major.

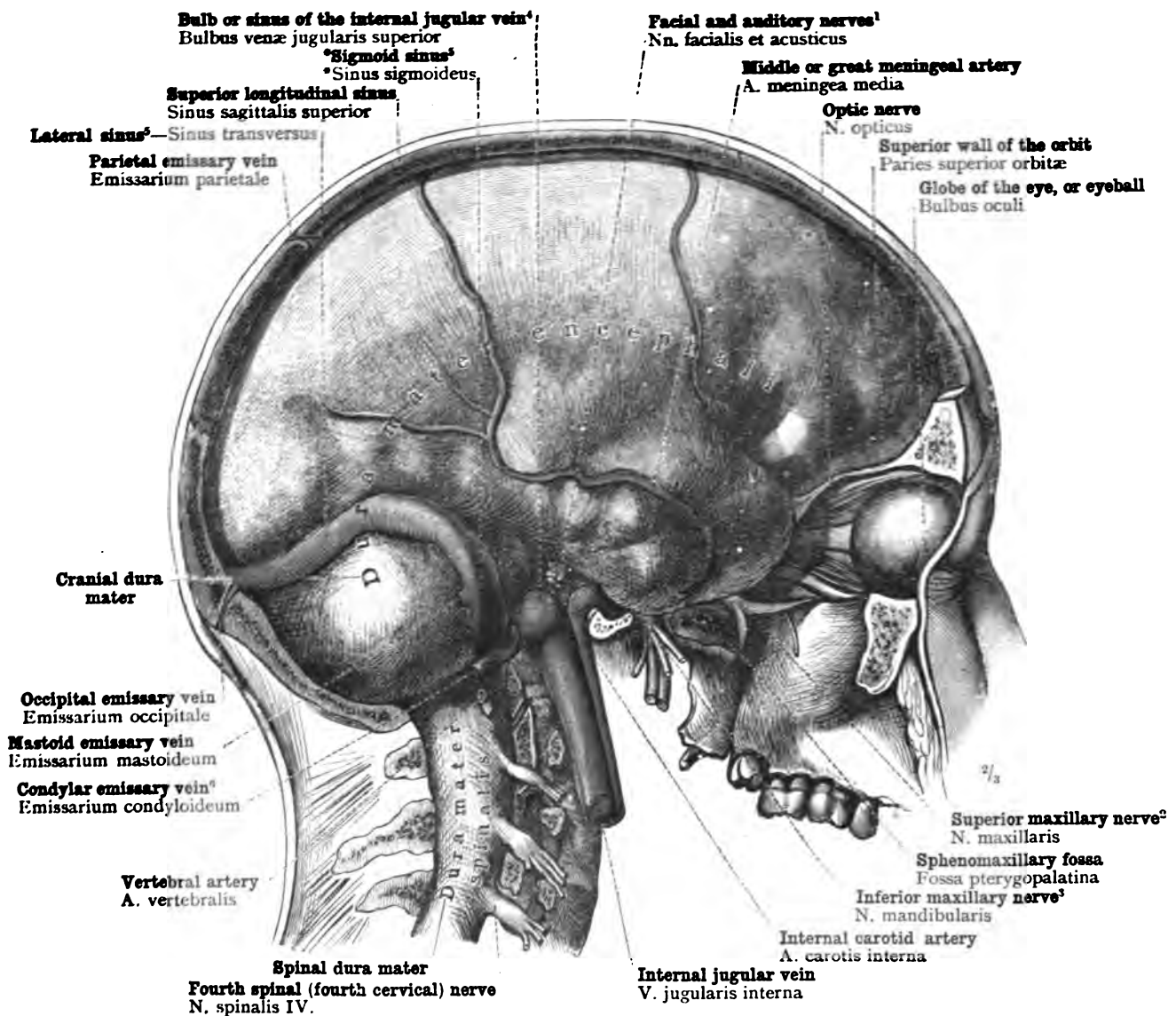


FIG. 1237.—THE CRANIAL DURA MATER, DURA MATER ENCEPHALI, DISPLAYED FROM THE SIDE IN CONTINUITY WITH THE SPINAL DURA MATER, DURA MATER SPINALIS, BY THE REMOVAL OF THE RIGHT HALF OF THE SKULL AND OF THE UPPER CERVICAL VERTEBRÆ. THE SINUSES OF THE DURA MATER (VENOUS SINUSES OF THE CRANIUM, MENINGEAL SINUSES), SINUS DURÆ MATRIS, AND ALSO THE EMISSARY VEINS (EMISSARIA SANTORINI) THAT CONNECT THESE SINUSES WITH THE VEINS OF THE EXTERIOR OF THE SKULL, WERE INJECTED WITH RESIN BY WAY OF THE INTERNAL JUGULAR VEIN.

¹ The *facial nerve* is the seventh cranial nerve in Soemmerring's enumeration, the *portio dura* of the seventh in that of Willis; the *auditory nerve* is the eighth cranial nerve in Soemmerring's enumeration, the *portio mollis* of the seventh in that of Willis.

² Or second division of the fifth cranial, trigeminal, or trifacial nerve.

³ Or third division of the fifth cranial, trigeminal, or trifacial nerve.

⁴ See Appendix to Part V., note 121.

⁵ See Appendix, note 410.

⁶ See Appendix to Part V., note 265.

Meninges encephali—The membranes of the brain.

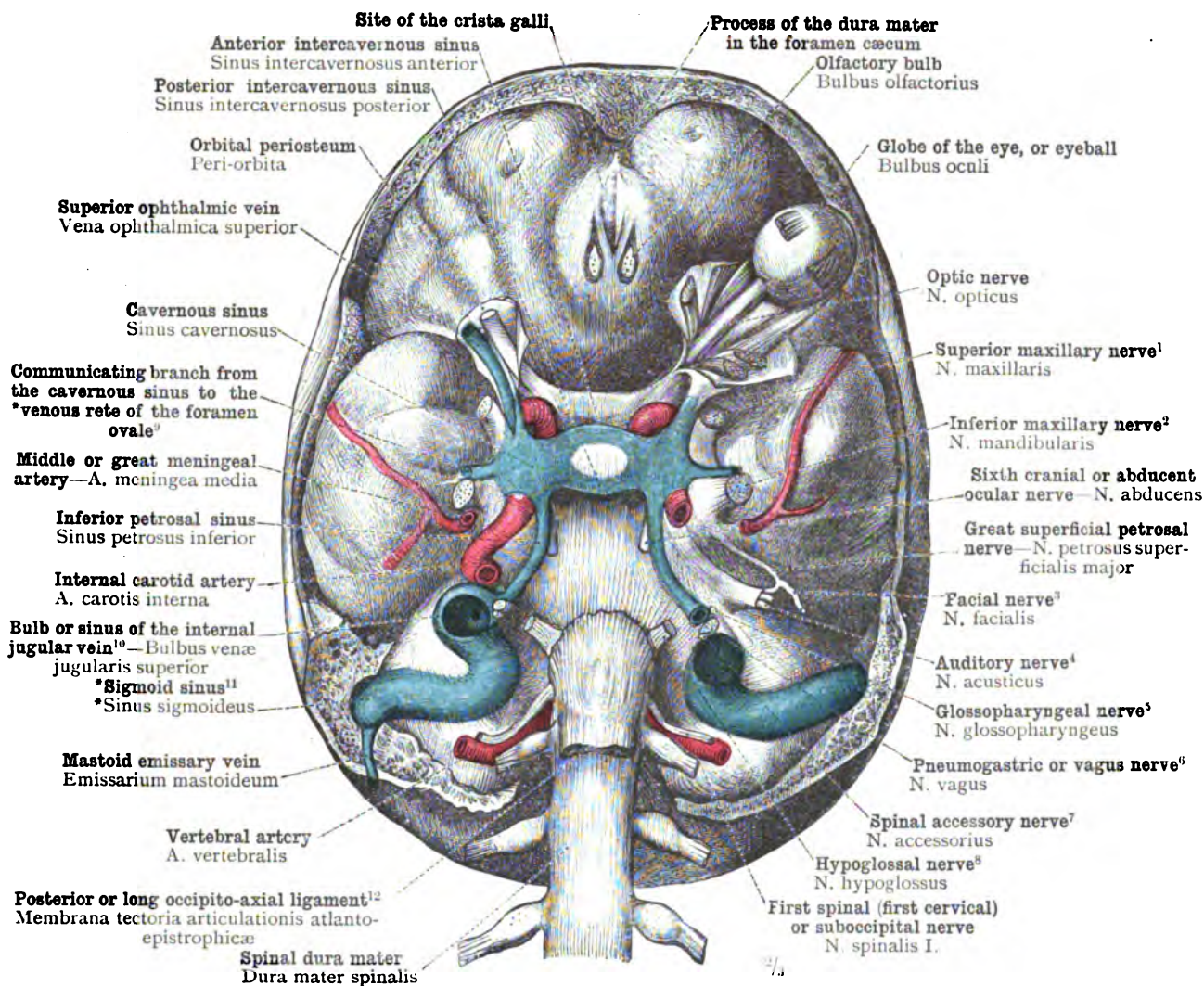


FIG. 1238.—THE CRANIAL DURA MATER, DURA MATER ENCEPHALI, DISPLAYED FROM BELOW IN CONTINUITY WITH THE SPINAL DURA MATER, DURA MATER SPINALIS, BY THE REMOVAL OF THE BASE OF THE SKULL AND THE UPPER CERVICAL VERTEBRÆ. THE TUBULAR PROLONGATIONS OF THE DURA MATER WHICH PASS ALONG THE CRANIAL AND SPINAL NERVES AS THEY LEAVE THE CEREBROSPINAL CAVITY ARE VISIBLE.

The basal sinuses of the dura mater (venous sinuses of the cranium, meningeal sinuses), sinus durae matris, have been distended with blue resin, the arteries with red resin. On the left side of the body, the glossopharyngeal, pneumogastric or vagus, and spinal accessory nerves, and also the bulb or sinus of the internal jugular vein (see *Appendix to Part V.*, note ¹²¹) and the lowest part of the inferior petrosal sinus, have been drawn apart one from another in the region of the jugular foramen, in order that their mutual relations may be more clearly manifest.

¹ Or second division of the fifth cranial, trigeminal, or trifacial nerve.

² Or third division of the fifth cranial, trigeminal, or trifacial nerve.

³ Seventh cranial nerve in Soemmerring's enumeration; *portio dura* of the seventh in that of Willis.

⁴ Eighth cranial nerve in Soemmerring's enumeration; *portio mollis* of the seventh in that of Willis.

⁵ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth in that of Willis.

⁶ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth in that of Willis.

⁷ Eleventh cranial nerve in Soemmerring's enumeration; third trunk of the eighth in that of Willis.

⁸ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also called the lingual motor nerve.

⁹ See Appendix to Part V., note ²²².

¹⁰ See Appendix to Part V., note ¹²¹.

¹¹ See Appendix, note ⁴¹⁰.

¹² Macalister calls this ligament *ligamentum latum axiale*, the broad axial ligament.

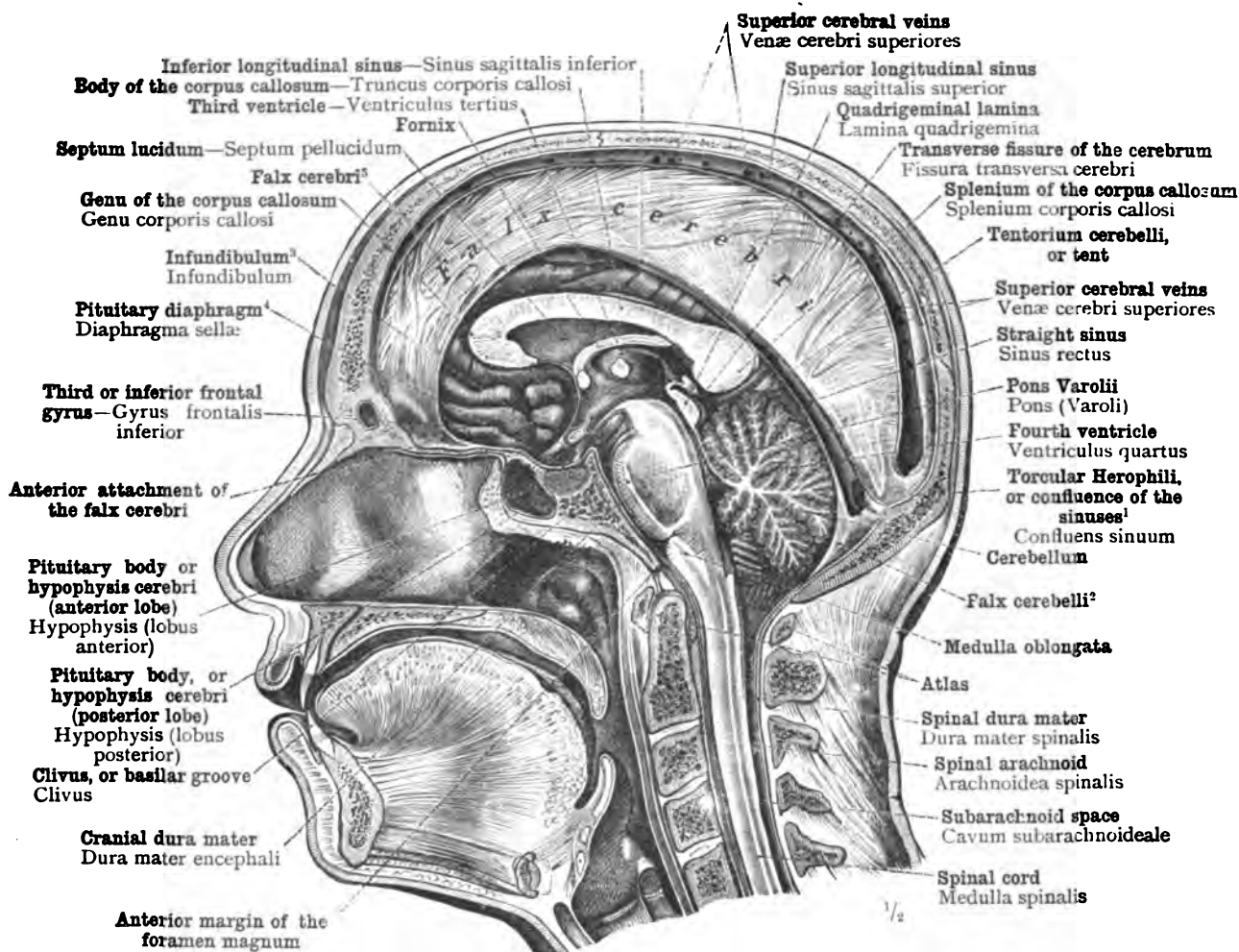
¹ See Appendix to Part V., note 26.² Sometimes called *falx minor*.³ See Appendix, note 36.⁴ By Quain called the *operculum* or *tentorium of the hypophysis*. See Appendix, note 41.⁵ Sometimes called the *falx major*.

FIG. 1239.—SAGITTAL SECTION THROUGH THE HEAD, TO THE LEFT OF, BUT CLOSE TO, THE MEDIAN PLANE. RELATIONS OF THE FALX CEREBRI TO THE CORPUS CALLOSUM OR GREAT COMMISSURE AND TO THE INNER OR MESIAL SURFACE OF THE CEREBRAL HEMI-SPHERES. THE MUTUAL RELATIONS OF THE PONS VAROLII, THE MEDULLA OBLONGATA, THE CEREBELLUM, AND THE THIRD AND FOURTH VENTRICLES; AND, FURTHER, THE RELATION OF THE VARIOUS PARTS JUST ENUMERATED TO THE ROOF OF THE SKULL IN THE MEDIAN PLANE.

Meninges encephali—The membranes of the brain.

SYSTEMA NERVORUM
PERIPHERICUM

THE
PERIPHERAL NERVOUS SYSTEM

NERVI SPINALES
SPINAL NERVES

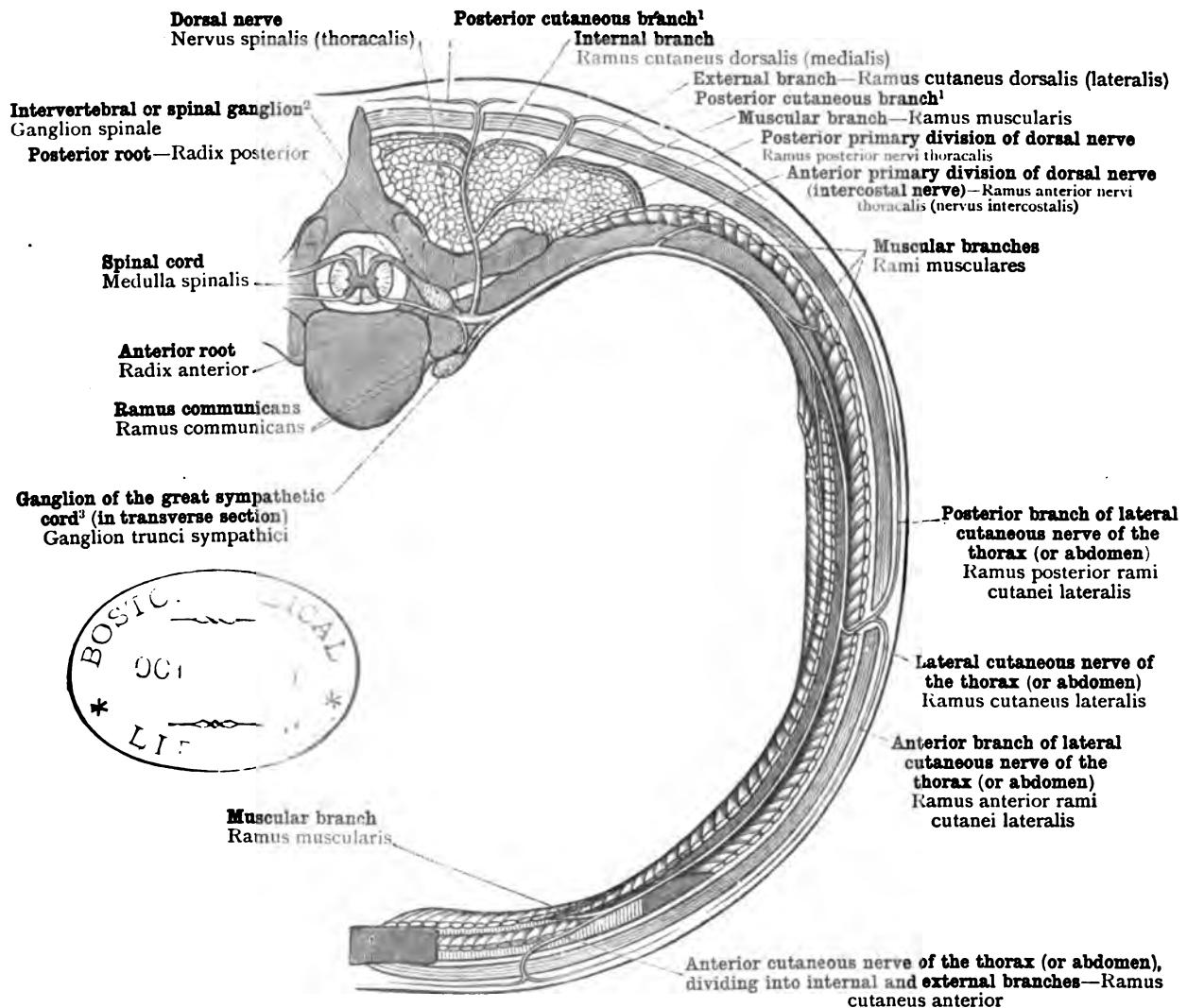
¹ See Appendix, note 413.² Also called the *ganglion of the posterior root*.³ Called by Gaskell *vertebral or lateral ganglion (of the sympathetic)*.⁴ See Appendix, note 414.

FIG. 1240.—DIAGRAMMATIC REPRESENTATION OF THE DISTRIBUTION OF A DORSAL NERVE, NERVUS THORACALIS, IN A SEGMENT OF THE TRUNK. ANTERIOR PRIMARY DIVISION, RAMUS ANTERIOR (OR INTERCOSTAL NERVE—see Appendix, note ⁴¹⁴—NERVUS INTERCOSTALIS), AND POSTERIOR PRIMARY DIVISION, RAMUS POSTERIOR. CONNEXION OF THE ANTERIOR PRIMARY DIVISION WITH THE GREAT GANGLIATED CORD OF THE SYMPATHETIC SYSTEM BY MEANS OF THE RAMUS COMMUNICANS.

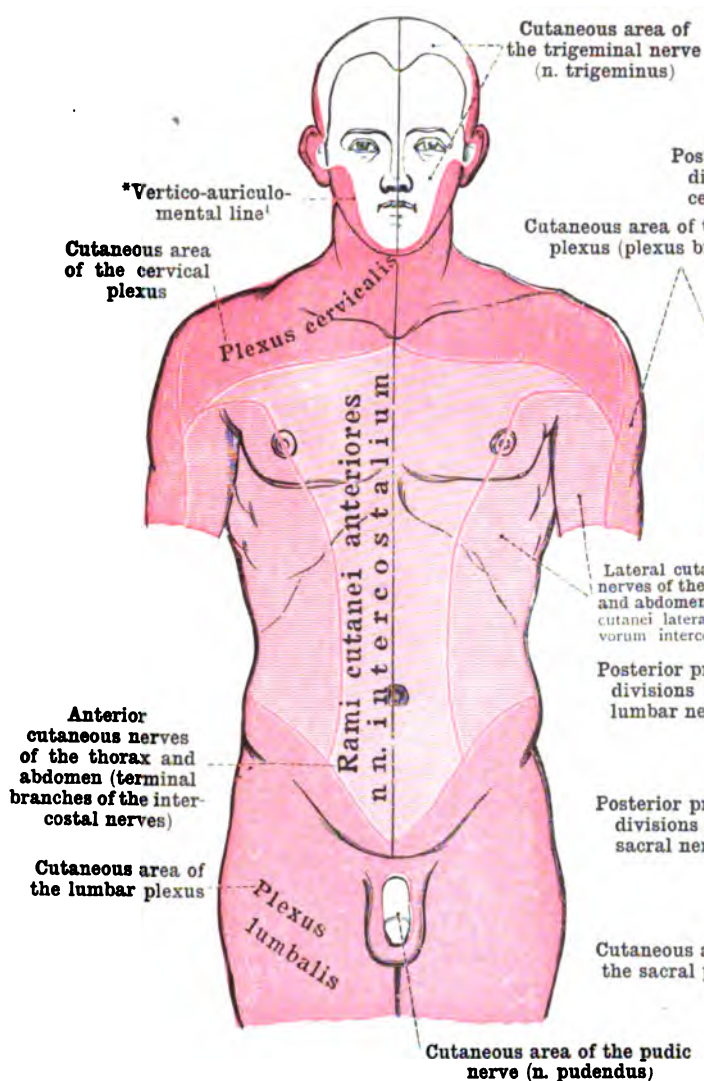


FIG. 1241.—THE CUTANEOUS AREAS OF THE NERVES OF THE TRUNK ON THE ANTERIOR SURFACE OF THE BODY.

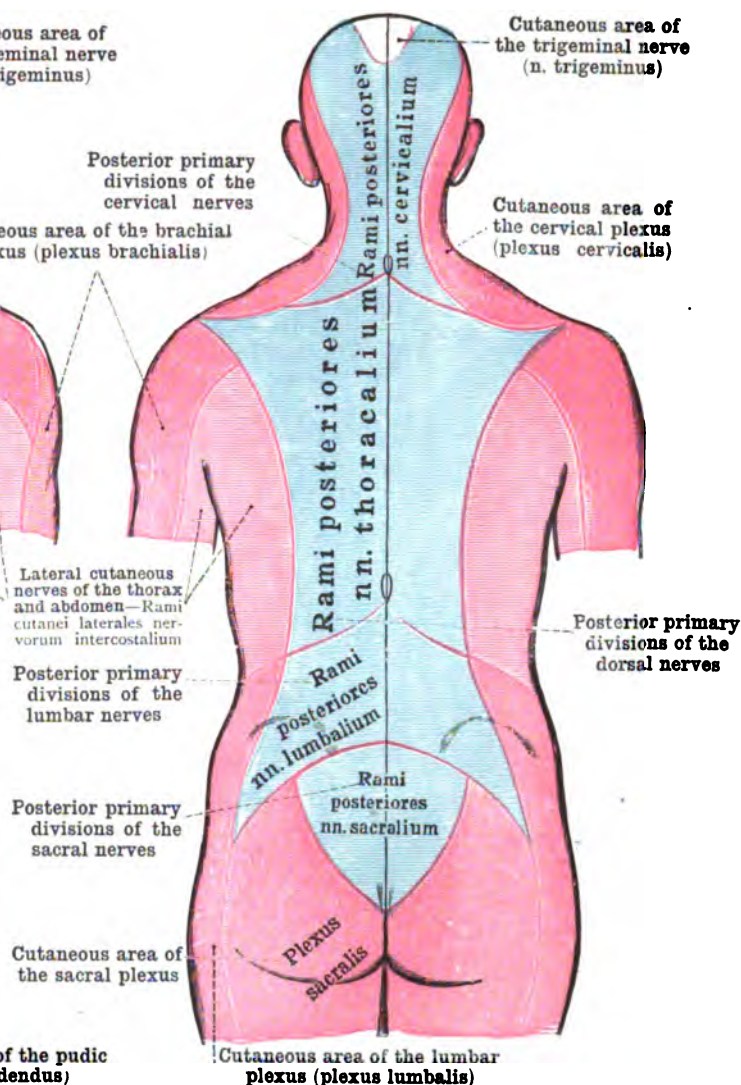


FIG. 1242.—THE CUTANEOUS AREAS OF THE NERVES OF THE TRUNK ON THE POSTERIOR SURFACE OF THE BODY.

The cutaneous areas of the anterior primary divisions of the spinal nerves are tinted red; the cutaneous areas of the posterior primary divisions are tinted blue.

* *Vertico-auriculo-mental Line*.—"The area of distribution of the spinal nerves . . . embraces . . . the whole of the skin, with the exception of the skin of the face, the forehead, and the vertex; the upper boundary of this area being a line which extends from the vertex over the auricle through the external auditory meatus, thence curves with a forward convexity over the parotidomasseteric region, and descends obliquely to the chin" (Von Langer and Toldt, *op. cit.*, p. 576). "The cutaneous area of the trigeminal nerve is bounded by the above-described *vertico-auriculomental line* (*Scheitel-Ohr-Kinnlinie*), which is the upper limit of the cutaneous area of the spinal nerves" (*ibid.*, pp. 696, 697).

Nerves of the Trunk.

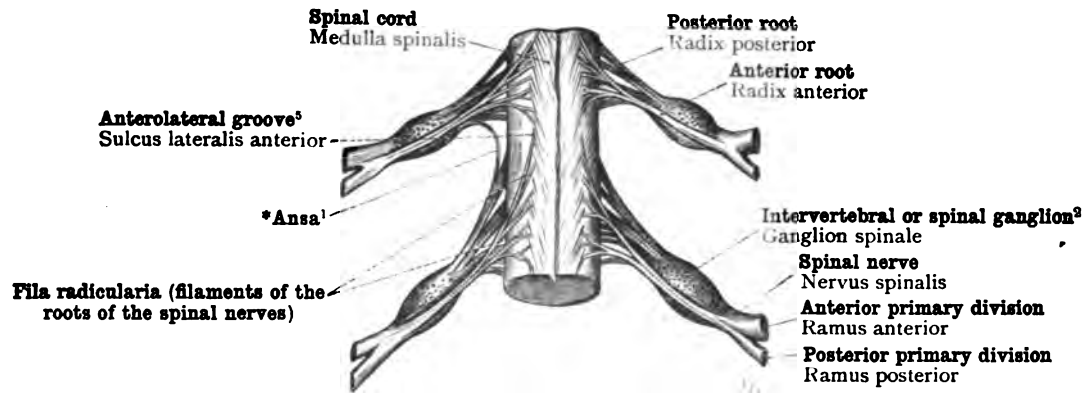
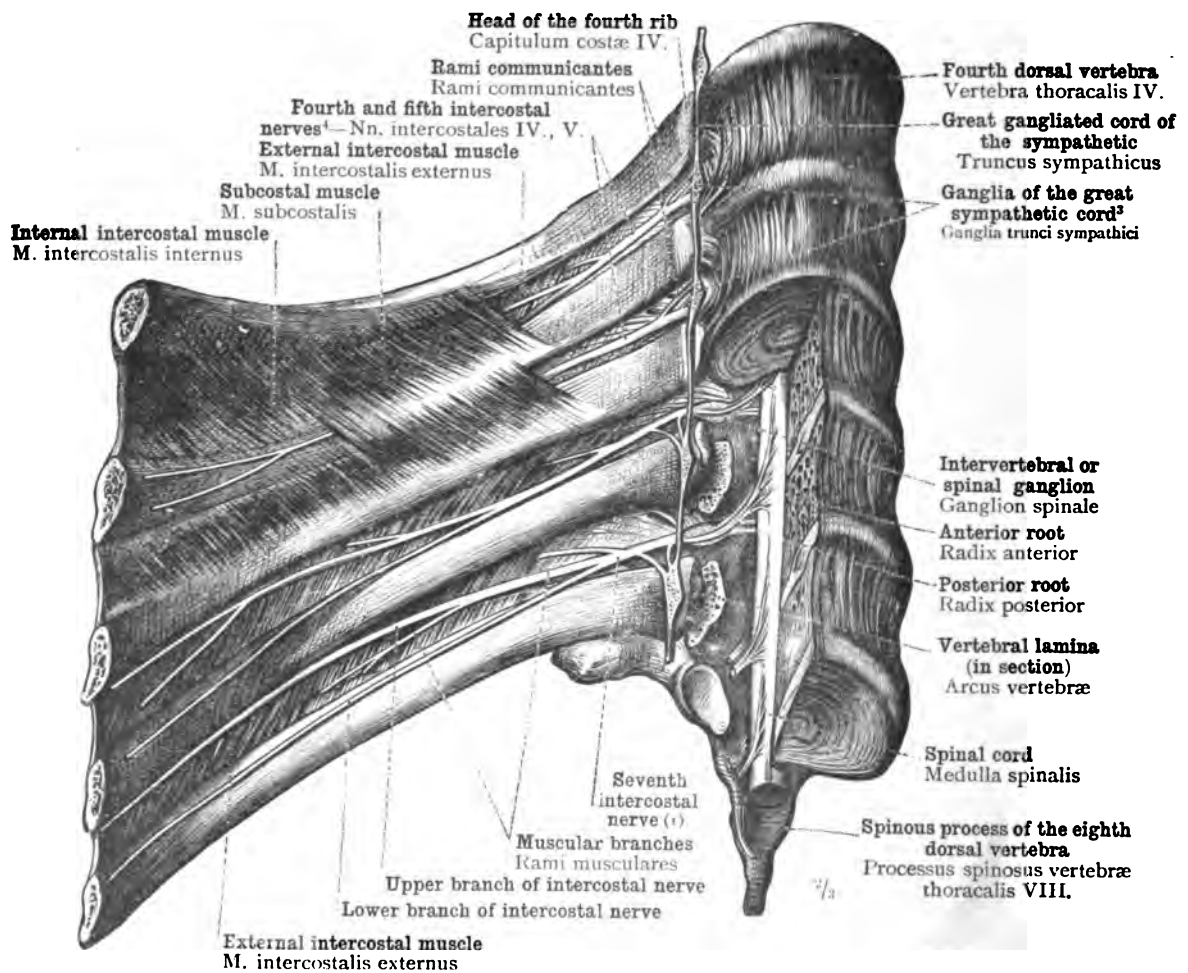


FIG. 1243.—THE UNION OF THE ANTERIOR AND POSTERIOR ROOTS OF THE SPINAL NERVES TO FORM THE MIXED TRUNKS OF THE SPINAL NERVES, NERVI SPINALES. THE INTERVERTEBRAL OR SPINAL GANGLIA (OR GANGLIA OF THE POSTERIOR ROOTS), GANGLIA SPINALIA.



(1) N. intercostalis VII.

FIG. 1244.—COURSE AND RAMIFICATION OF THE ANTERIOR PRIMARY DIVISIONS OF THE DORSAL NERVES, NERVI THORACALES, CONSTITUTING THE INTERCOSTAL NERVES, NERVI INTERCOSTALES, AND THEIR CONNEXION WITH THE GREAT GANGLIATED CORD OF THE SYMPATHETIC, TRUNCUS SYMPATHICUS, AS SEEN FROM THE INTERIOR OF THE TRUNK.

In the sixth, seventh, and eighth dorsal vertebrae, the right half of the vertebral body has been cut away; and in the sixth and seventh intercostal spaces the internal intercostal muscle has been removed.

¹ See Appendix, note 415.

² Also called the *ganglion of the posterior root*.

³ Called by Gaskell *vertebral* or *lateral ganglia* (of the sympathetic).

⁴ See Appendix, note 414.

⁵ See Appendix, note 335.

Nerves of the Trunk.—Nervi intercostales—The intercostal nerves (see Appendix, note 414).

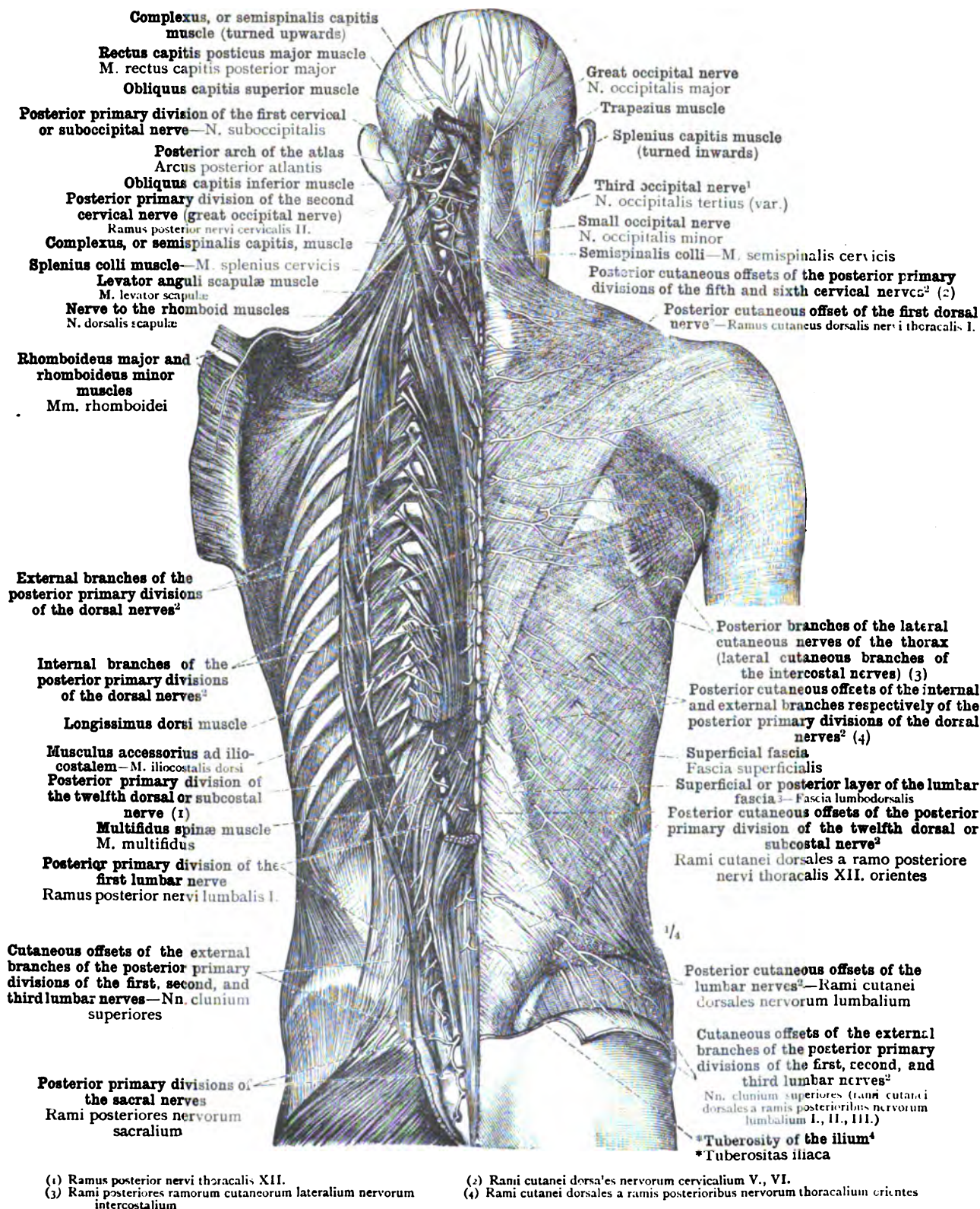


FIG. 1245.—THE DISTRIBUTION OF THE POSTERIOR PRIMARY DIVISIONS, RAMI POSTERIORES, OF THE SPINAL NERVES, NERVI SPINALES. ON THE RIGHT SIDE OF THE BODY THE CUTANEOUS OFFSETS, ON THE LEFT SIDE THE MUSCULAR OFFSETS, ARE SHOWN; AND ON THE LEFT SIDE ALSO, IN PART, THE COURSE OF THE TRUNKS OF THE POSTERIOR PRIMARY DIVISIONS.

¹ See Appendix, note 416.

² See Appendix, note 413.

³ For an account of the nomenclature of the different portions of the lumbar fascia, see footnotes to pp. 267 and 285, in Part III.

⁴ See footnote to p. 123, in Part I.

Nerves of the Trunk—Posterior Primary Divisions of the Spinal Nerves.

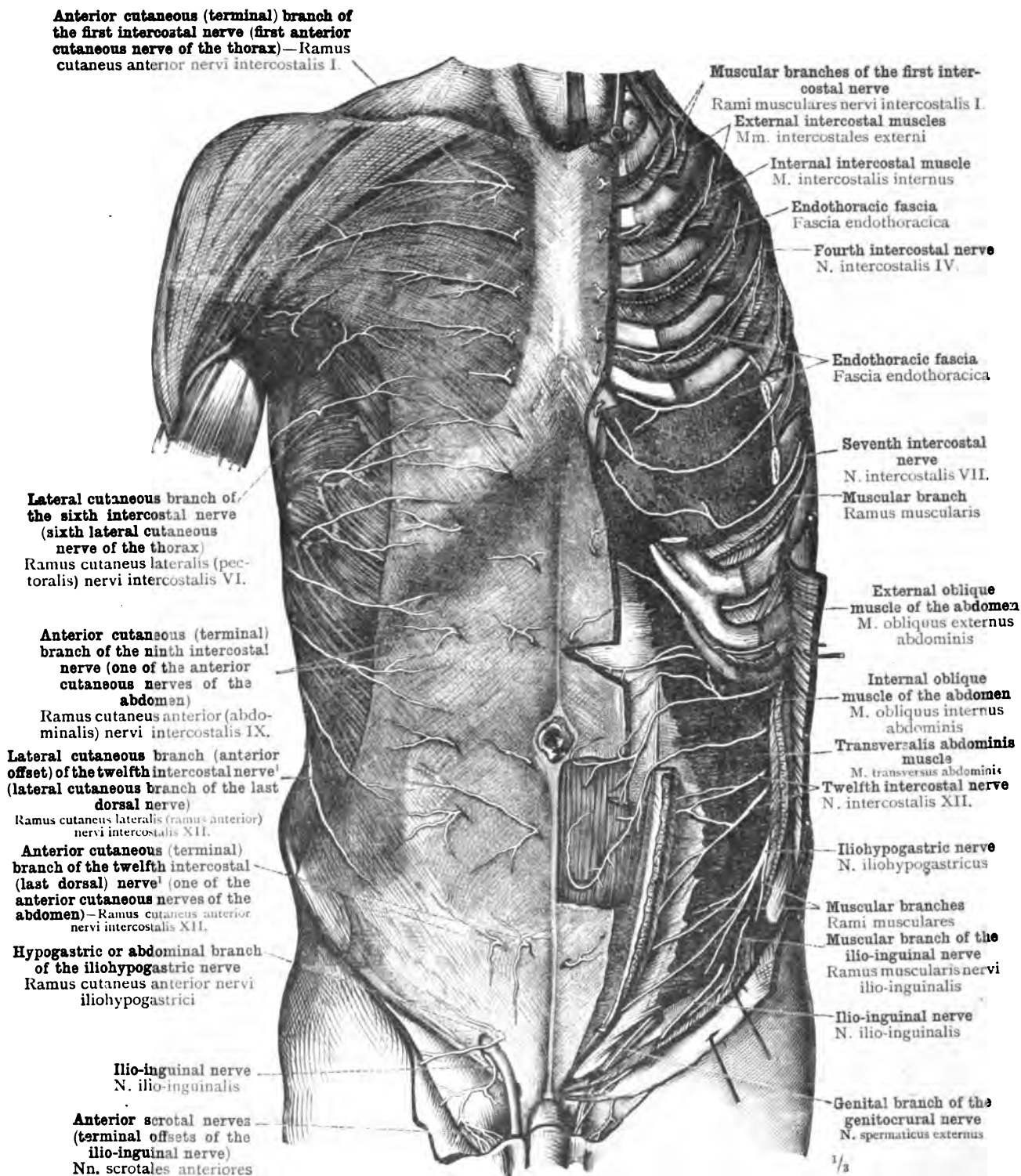
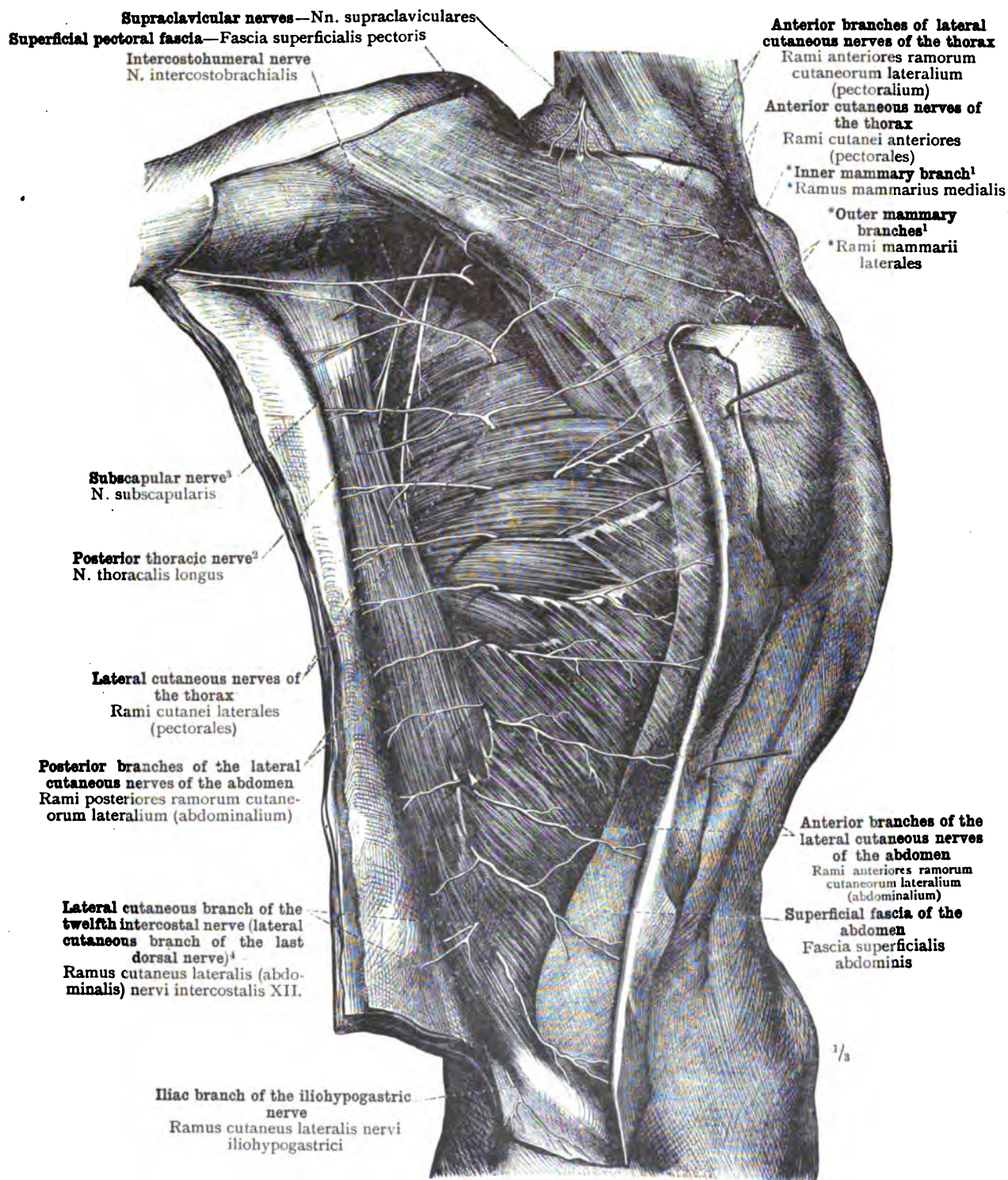


FIG. 1246.—THE CUTANEOUS NERVES OF THE ANTERIOR SURFACE OF THE TRUNK.

In order to demonstrate the course of the intercostal nerves, the sixth and seventh ribs and the cartilage of the eighth rib were on the left side partially removed; the situation of the removed segments is, however, indicated by dotted lines. The external and internal intercostal muscles, and also the external and internal oblique muscles of the abdomen and the rectus abdominis muscle, were partially removed.

Nerves of the Trunk.—Rami anteriores nervorum intercostalium—Anterior cutaneous nerves of the thorax and abdomen.



¹ See Appendix, note 417.
³ See Appendix, note 418.

² Formerly known as the *external respiratory nerve of Bell*.

⁴ The *twelfth intercostal nerve* is sometimes distinguished as the *subcostal nerve*.

FIG. 1247.—THE CUTANEOUS NERVES OF THE RIGHT SIDE OF THE TRUNK; THE LATERAL CUTANEOUS NERVES OF THE THORAX AND ABDOMEN (LATERAL CUTANEOUS BRANCHES OF THE INTERCOSTAL NERVES, RAMI CUTANEI LATERALES NERVORUM INTERCOSTALIIUM). INTERCOSTOHUMERAL NERVES, A HUMERAL OFFSET ARISING IN THIS SPECIMEN FROM THE LATERAL CUTANEOUS OFFSET, NOT ONLY OF THE SECOND, BUT ALSO OF THE THIRD INTERCOSTAL NERVE.

Nerves of the Trunk.—Rami cutanei laterales nervorum intercostalium—Lateral cutaneous nerves of the thorax and abdomen.

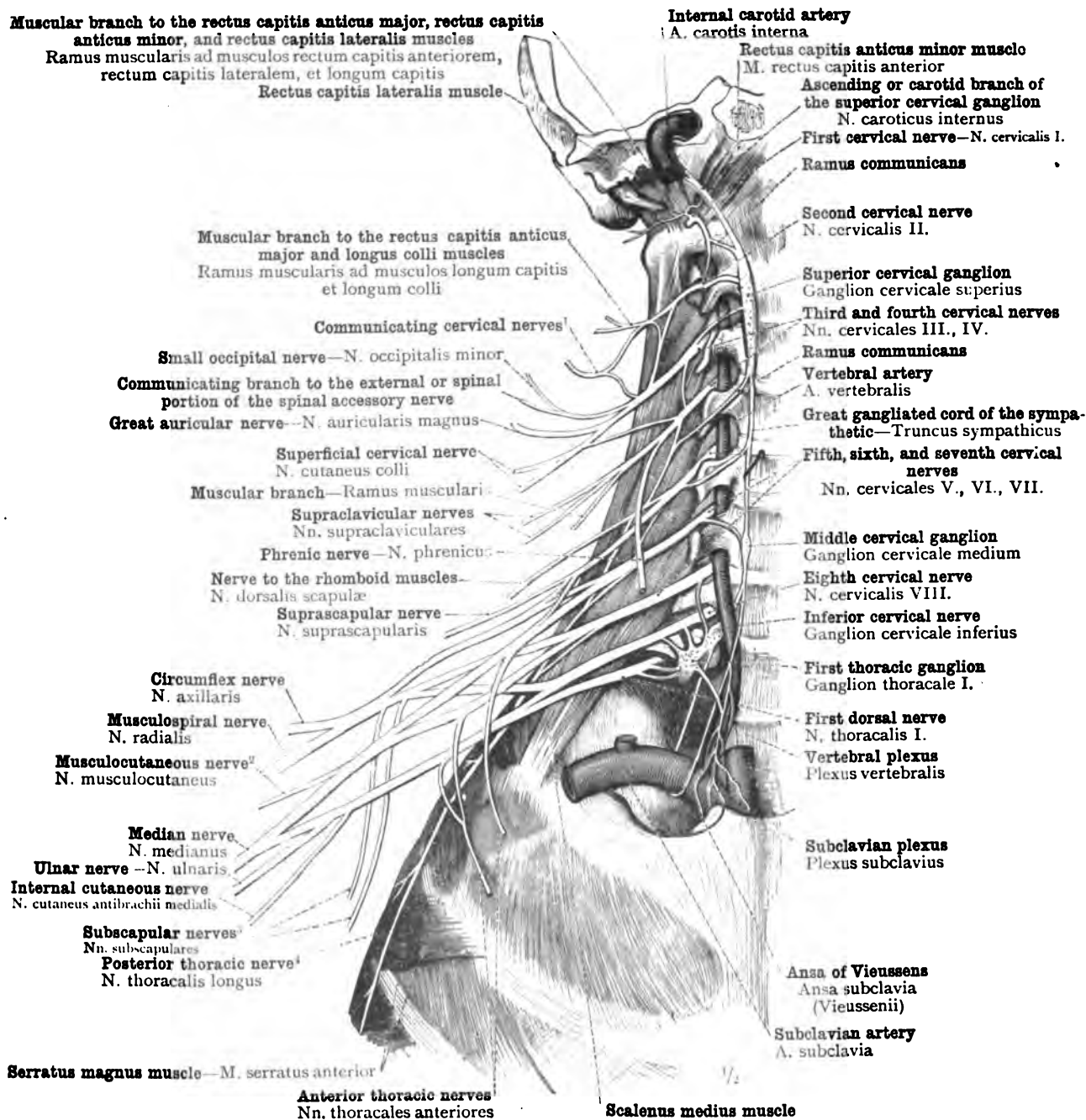
¹ See Appendix, note 419.³ See Appendix note 414.² Sometimes called the *external cutaneous nerve*.⁴ Formerly known as the *external respiratory nerve of Bell*.

FIG. 1248. FORMATION OF THE CERVICAL PLEXUS FROM THE ANTERIOR PRIMARY DIVISIONS OF THE FOUR UPPER CERVICAL NERVES, AND THE FORMATION OF THE BRACHIAL PLEXUS FROM THE ANTERIOR PRIMARY DIVISIONS OF THE FOUR LOWER CERVICAL NERVES AND THE FIRST DORSAL NERVE. THE NAMED NERVES ARISING FROM THE CERVICAL PLEXUS AND THE BRACHIAL PLEXUS. THE COMMUNICATIONS BETWEEN THE CERVICAL NERVES AND THE GANGLIA OF THE GREAT SYMPATHETIC CORD.

Plexus cervicalis—Cervical plexus.—Plexus brachialis—Brachial plexus.

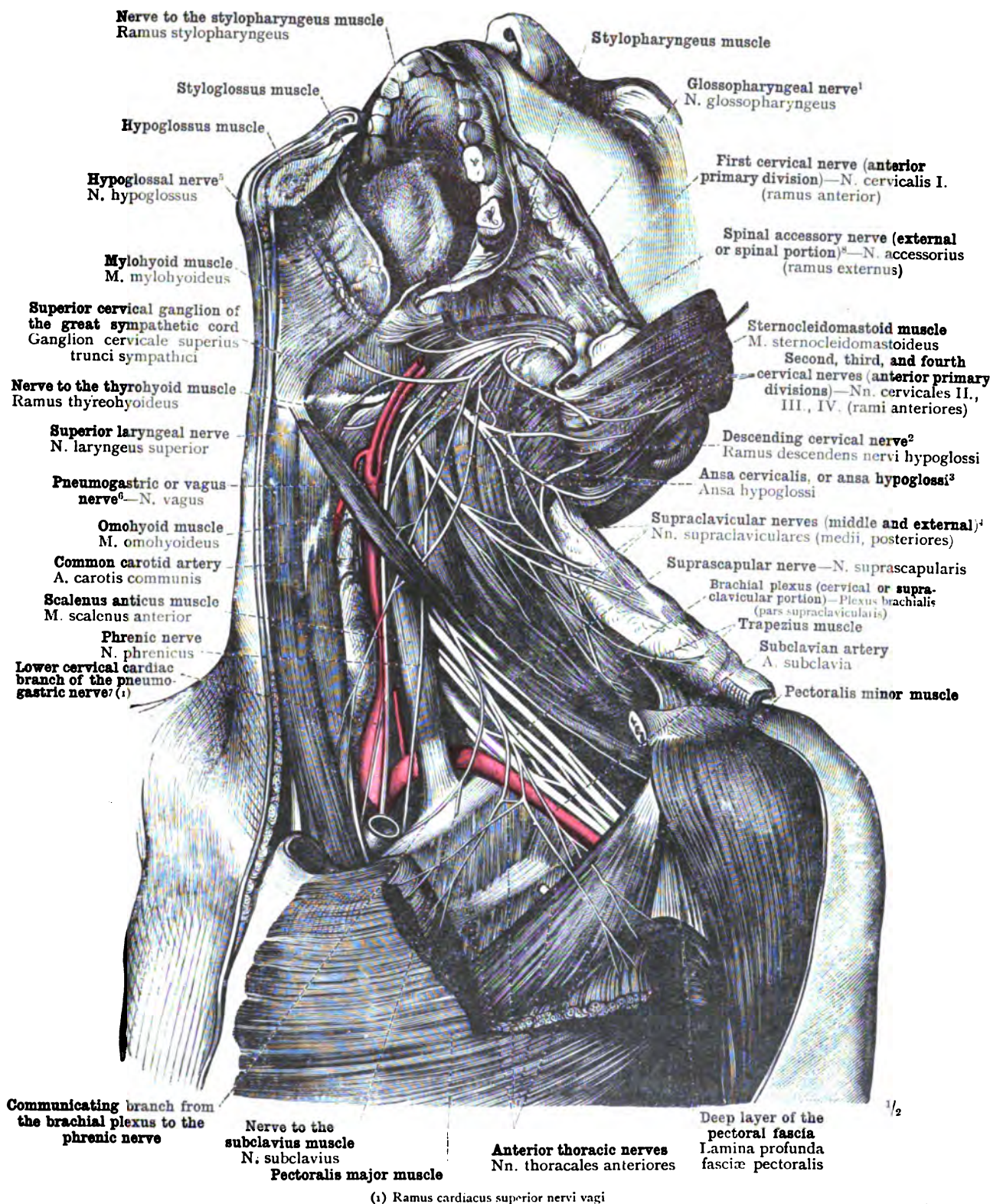


FIG. 1249.—THE DEEP NERVES OF THE NECK, DISPLAYED BY THE REMOVAL OF THE STERNOCLEIDOMASTOID MUSCLE. BY THE PARTIAL REMOVAL OF THE CLAVICLE THE BRACHIAL PLEXUS HAS ALSO BEEN EXPOSED.

- ¹ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.
- ² See Appendix, note 420.
- ³ See Appendix, note 421.
- ⁴ Supraclavicular Nerves.—These are arranged in three groups: internal or suprasternal; middle or supraclavicular (proper); and external or supra-acromial, also called posterior branches.
- ⁵ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.
- ⁶ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.
- ⁷ See Appendix, note 422.
- ⁸ Eleventh cranial nerve in Soemmerring's enumeration; third trunk of the eighth cranial nerve in that of Willis.

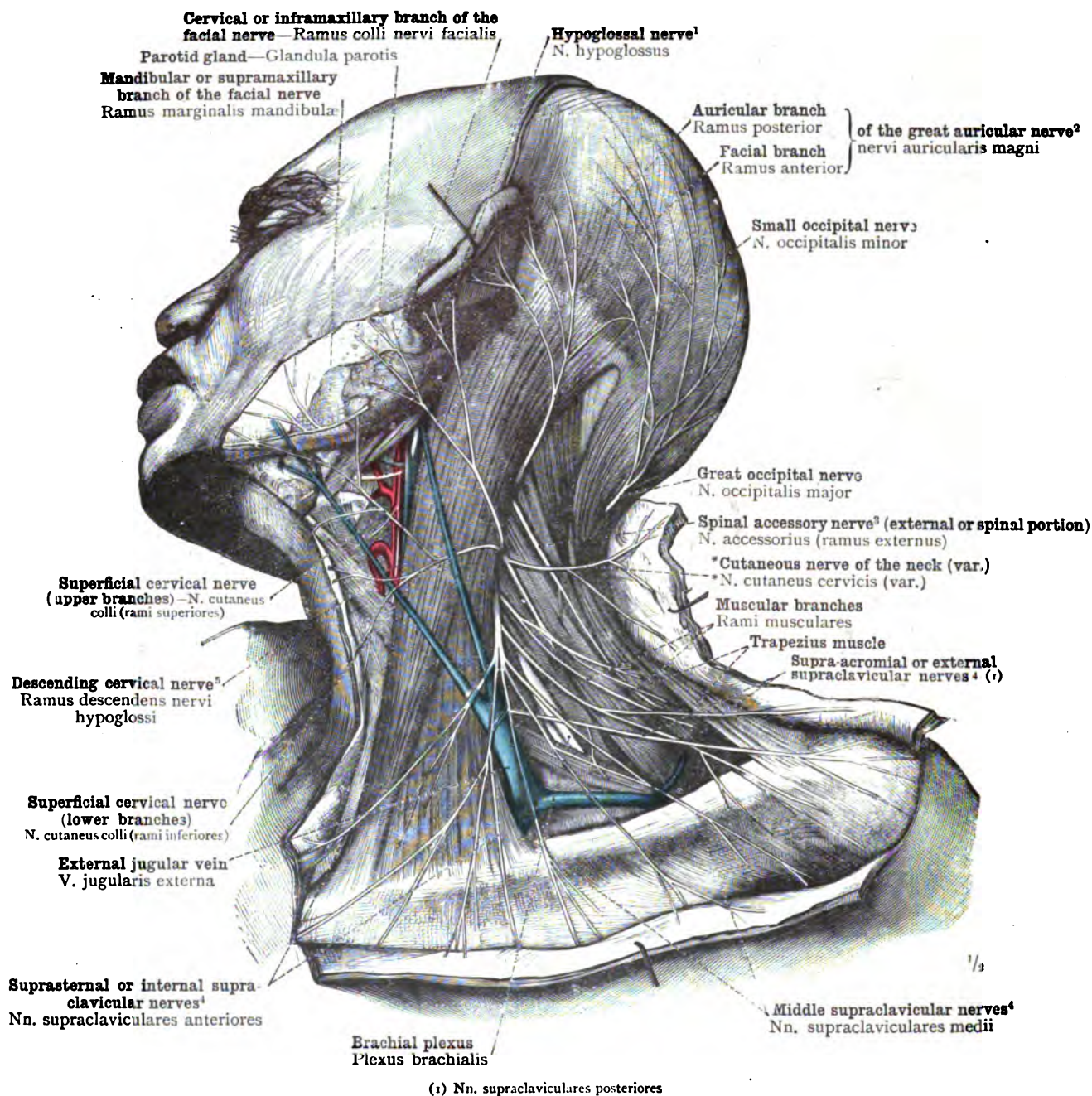


FIG. 1250.—THE CUTANEOUS NERVES OF THE HEAD AND NECK THAT ARE DERIVED FROM THE CERVICAL PLEXUS, AND THE MUSCULAR BRANCHES OF THE SAME PLEXUS THAT SUPPLY THE TRAPEZIUS AND LEVATOR ANGULI SCAPULÆ MUSCLES. THE EXTERNAL OR SPINAL PORTION OF THE SPINAL ACCESSORY NERVE. THE GREAT OCCIPITAL NERVE, N. OCCIPITALIS MAJOR. THE MANDIBULAR OR SUPRAMAXILLARY BRANCH OF THE FACIAL NERVE, RAMUS MARGINALIS MANDIBULÆ NERVI FACIALIS, AND THE COMMUNICATION BETWEEN THIS NERVE AND THE UPPER BRANCH OF THE SUPERFICIAL CERVICAL NERVE, N. CUTANEUS COLLI.

The nerves are displayed by the removal of the platysma myoides and the deep cervical fascia.

¹ Twelfth cranial nerve in Soemmerring's enumeration, ninth cranial nerve in that of Willis; also known as the lingual motor nerve.

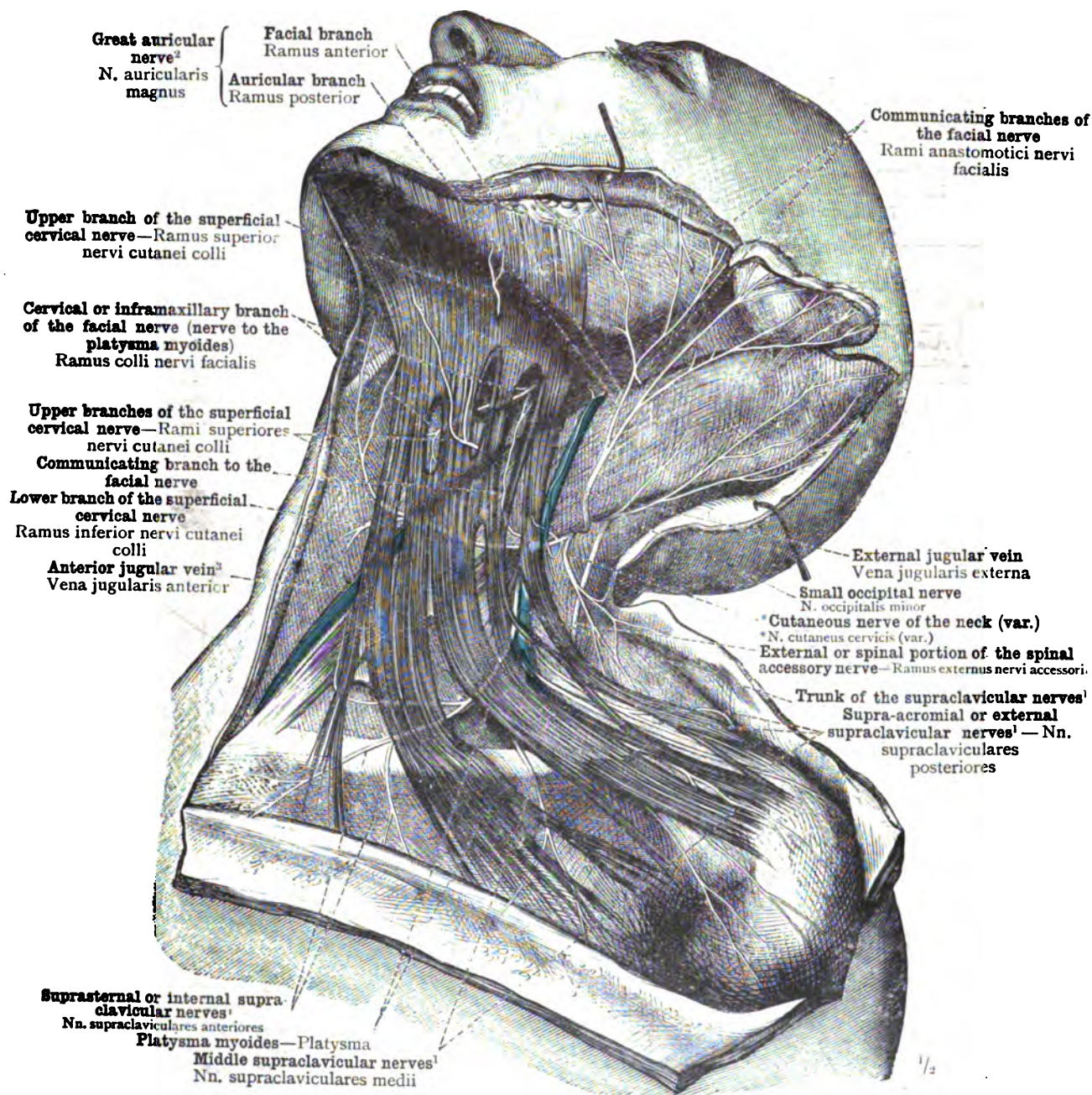
² See Appendix, note 423.

³ Eleventh cranial nerve in Soemmerring's enumeration; third trunk of the eighth cranial nerve in that of Willis.

⁴ See note 4 to p. 817.

⁵ Often called the descendens noni nerve. See Appendix, note 420.

Nerves of the Neck.



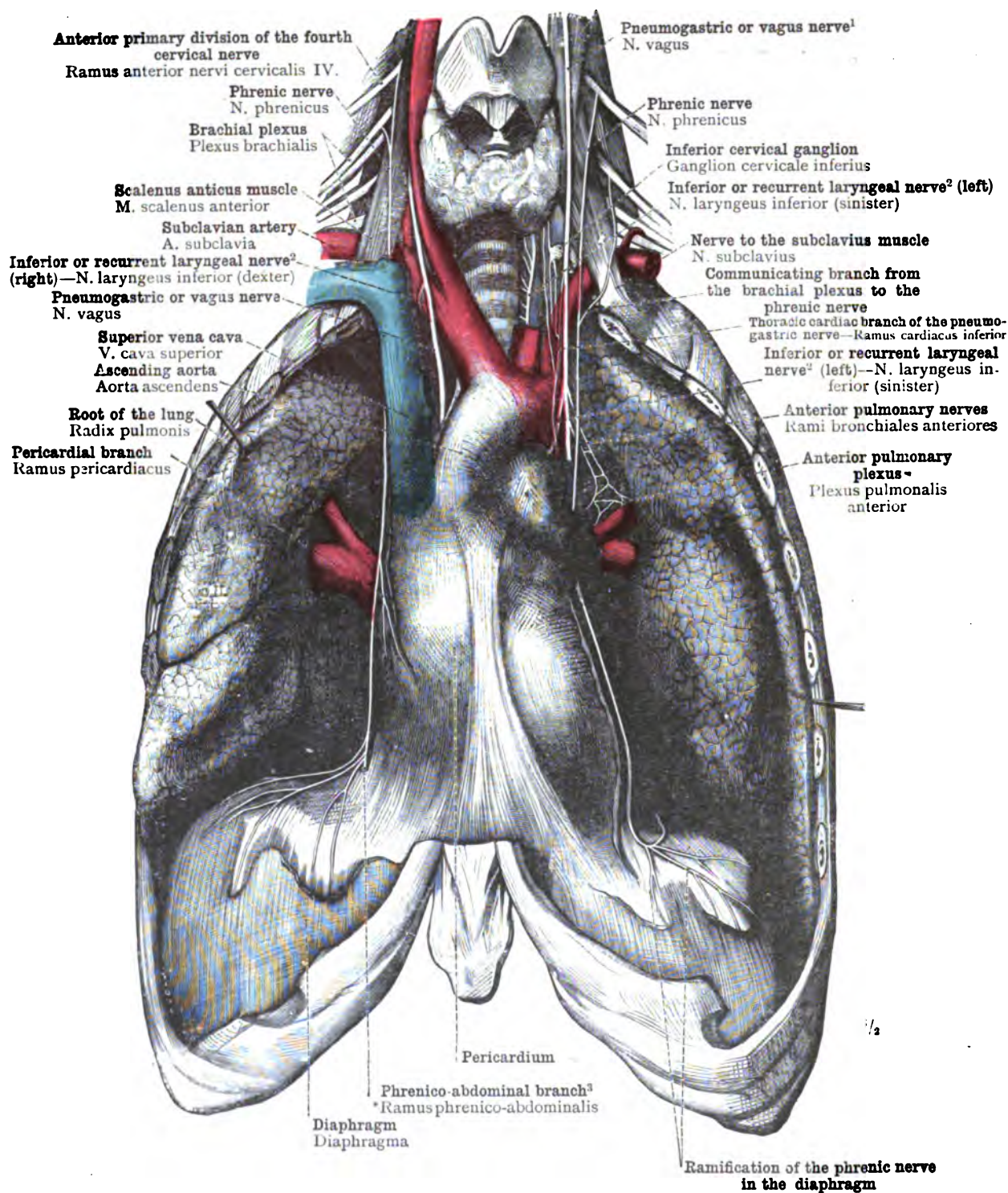
¹ See note 4 to p. 817.

² See Appendix, note 423.

³ Anterior Jugular Vein.—Macalister used the term *vena mediana colli* as an alternative name for this vein. See Appendix to Part V., note 197.

FIG. 1251.—THE CUTANEOUS NERVES OF THE HEAD AND NECK THAT ARE DERIVED FROM THE CERVICAL PLEXUS IN RELATION TO THE PLATYSMA MYOIDES. THE FASCICULI OF THE LATTER ARE SEPARATED HERE AND THERE, IN ORDER TO DISPLAY IN THE INTERVALS THUS MADE THE NERVES COVERED BY THE MUSCLE.

Nerves of the Neck.



¹ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

² See note 3 to p. 872.

³ See Appendix, note 424.

FIG. 1252.—THE PHRENIC OR DIAPHRAGMATIC NERVE, NERVUS PHRENICUS, AND ITS RELATIONS WITH THE VAGUS NERVE.

In the thoracic region, the phrenic nerves were exposed by drawing apart the anterior borders of the lungs, and their course along the side of the pericardium was displayed by an incision through the pericardial pleura.

Nervus phrenicus—The phrenic nerve.

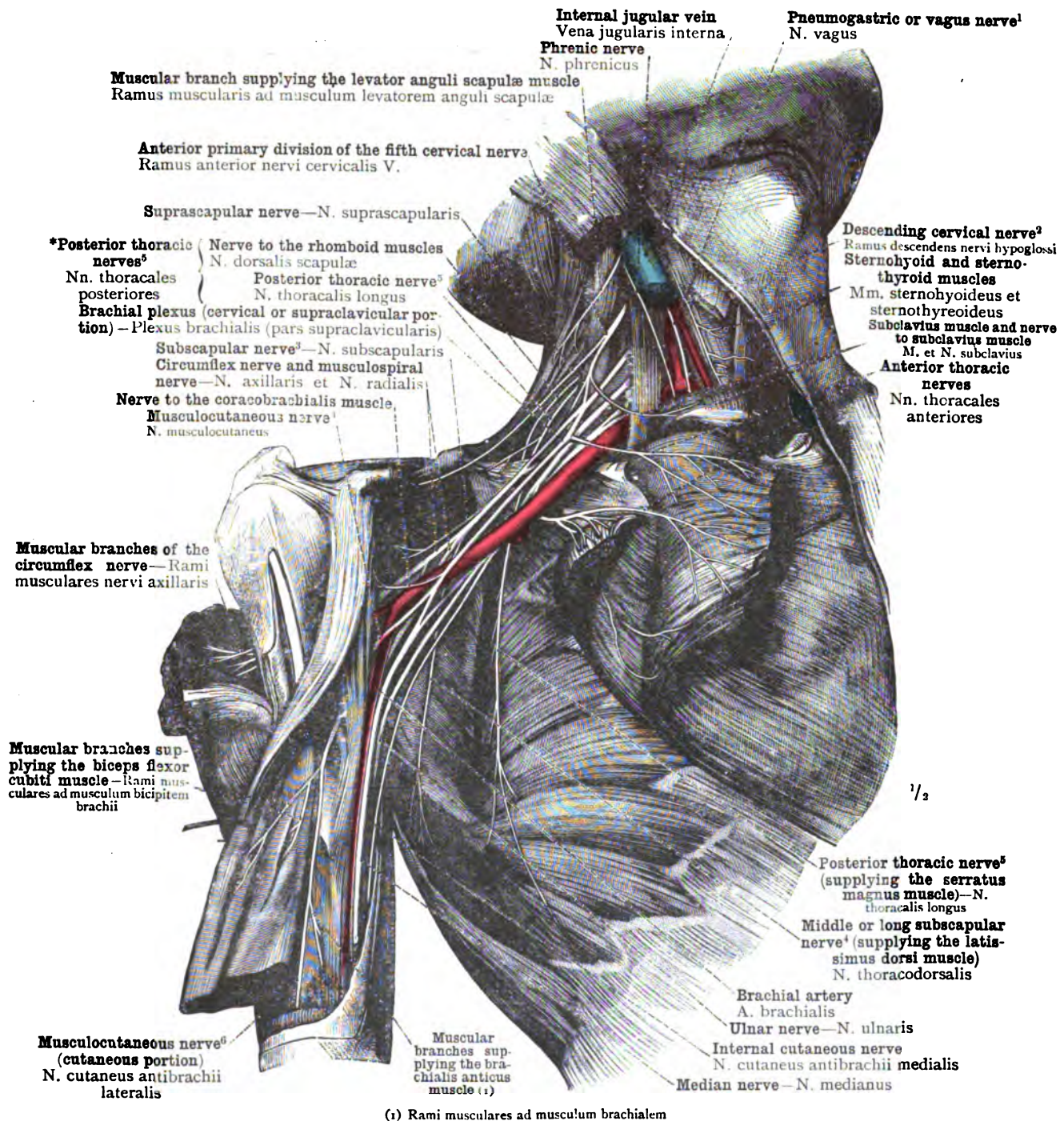


FIG. 1253.—THE NERVES DERIVED FROM THE BRACHIAL PLEXUS FOR THE SUPPLY OF THE MUSCLES OF THE SHOULDER-JOINT, THE MUSCLES CONNECTING THE ARM WITH THE TRUNK, AND THE MUSCLES OF THE SHOULDER-GIRDLE. THE MOTOR OFFSETS OF THE MUSCULOCUTANEOUS (OR EXTERNAL CUTANEOUS) NERVE.

The pectoralis major and pectoralis minor muscles were cut across near their distal extremities and turned inwards; the muscles attached to the clavicle were also detached from that bone and turned aside; the deltoid muscle was divided and turned downwards; the biceps divided and turned outwards. The sternoclavicular and acromioclavicular articulations were cut through and the clavicle was removed.

¹ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

² Often called the *descendens noni nerve*. See Appendix, note 4th.

⁴ See Appendix, note 4th.

⁵ See Appendix, note 4th.

³ See Appendix, note 4th.

⁶ Sometimes called the *external cutaneous nerve*.

Motor Nerves of the Brachial Plexus.

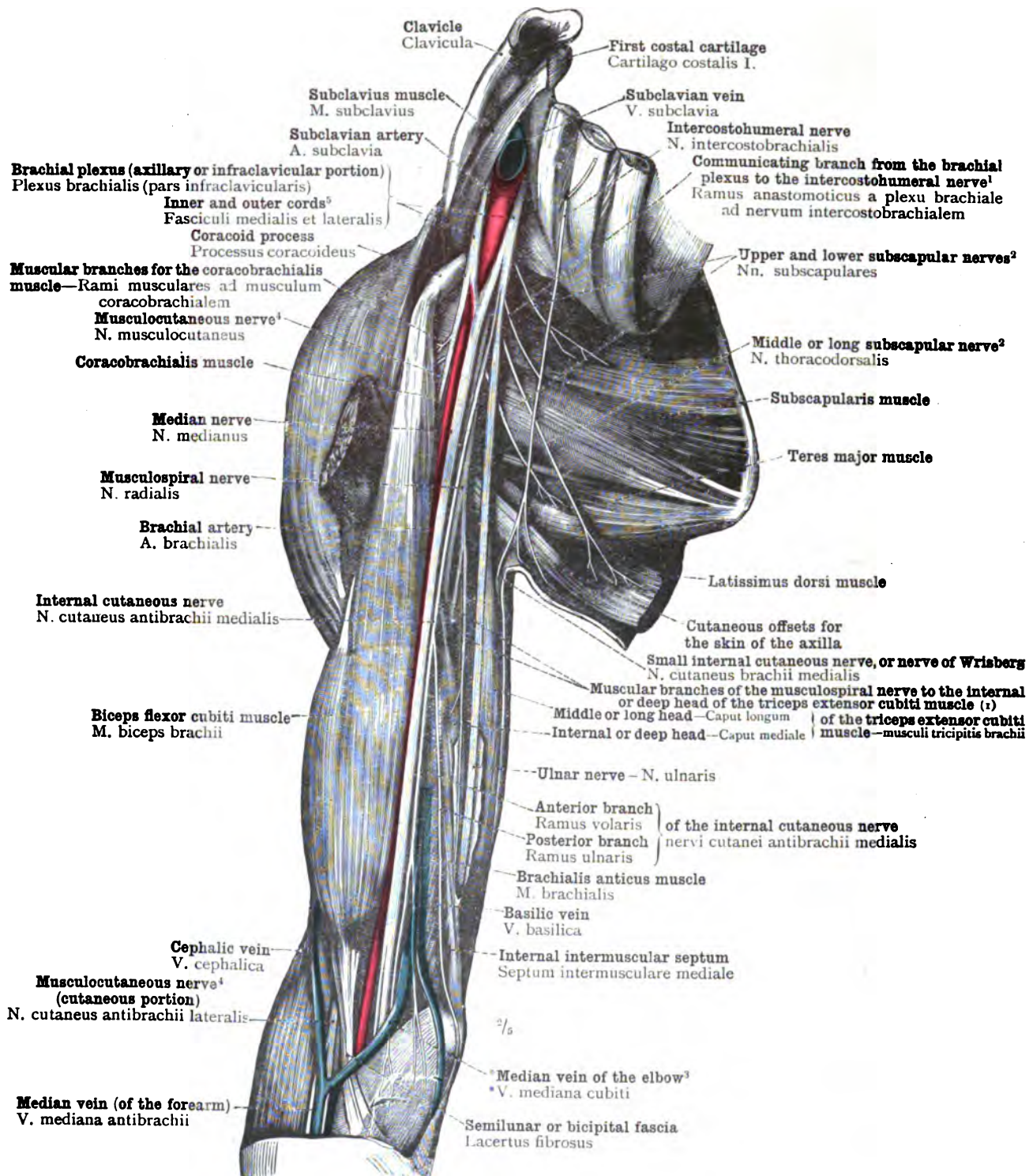


FIG. 1254.—THE DEEP NERVES OF THE SHOULDER AND THE UPPER ARM, SEEN FROM BEFORE AND THE INNER SIDE.

¹ The communication between the brachial plexus and the intercostohumeral nerve is usually effected by means of a branch of the small internal cutaneous nerve (nerve of Wrisberg).
² See Appendix, note 418.
³ See Appendix to Part V., note 308.
⁴ Sometimes called the *external cutaneous nerve*.
⁵ See Appendix, note 426.

Nerves of the Shoulder and the Upper Arm.

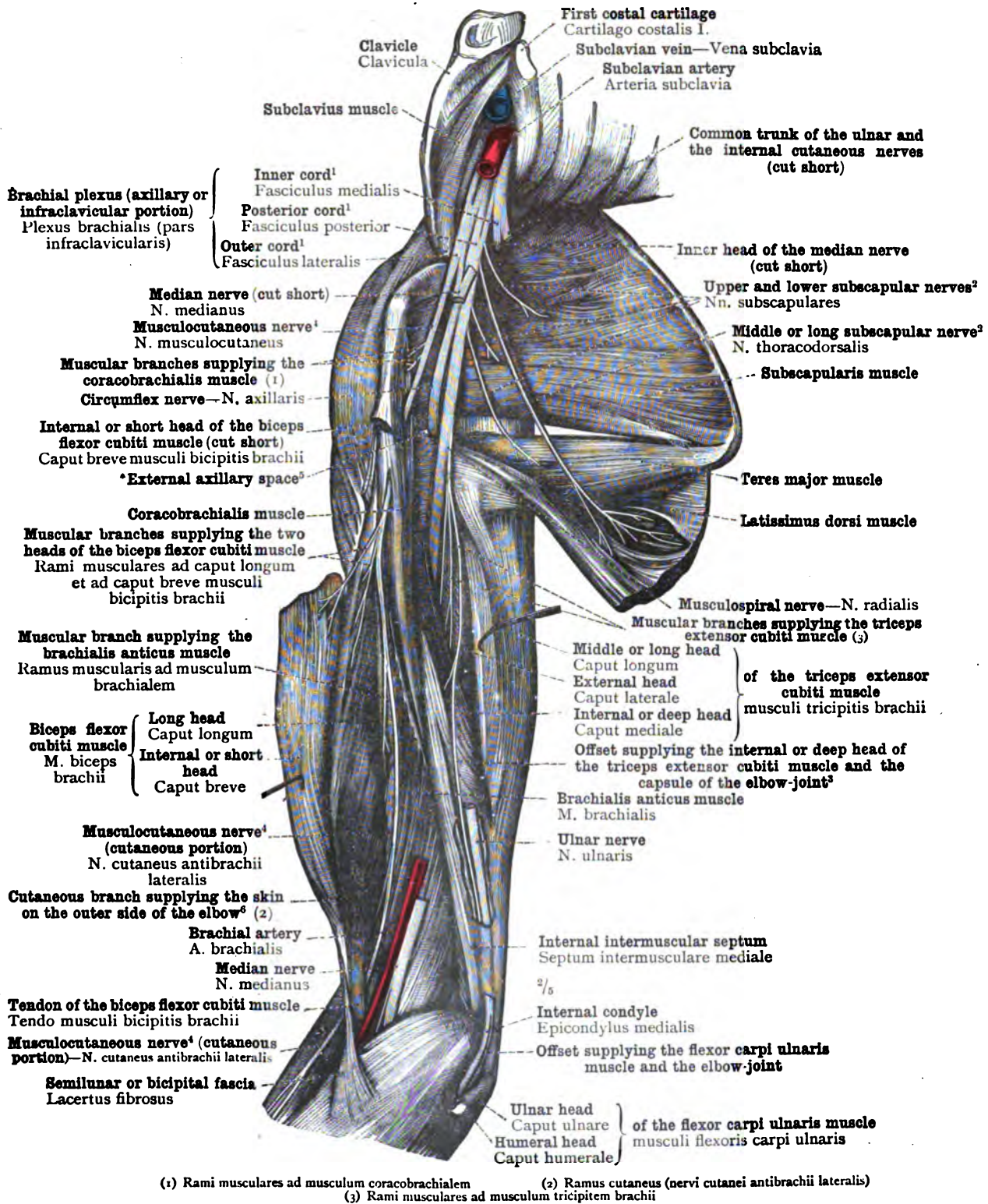
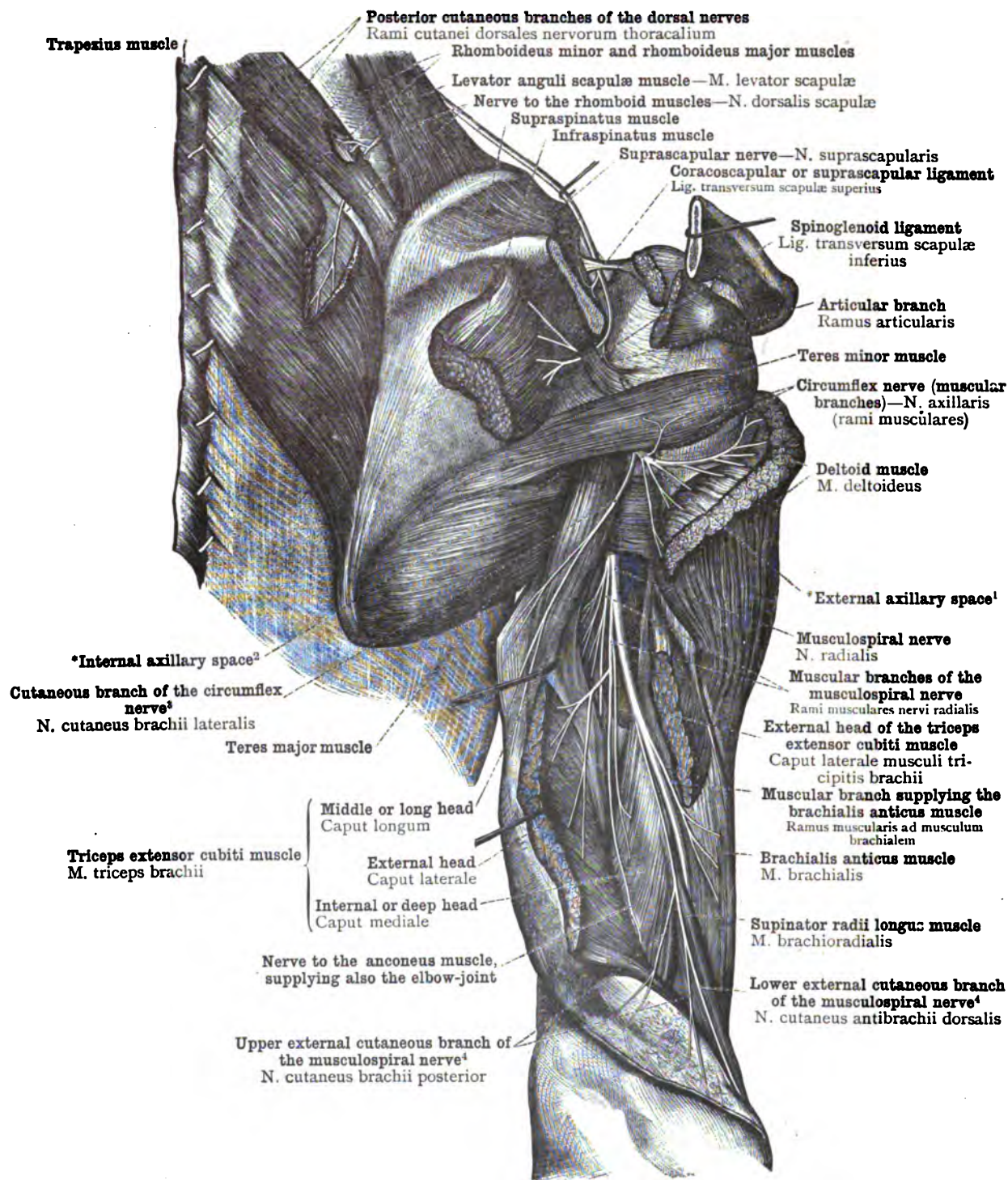


FIG. 1255.—THE DEEP NERVES OF THE SHOULDER AND THE UPPER ARM, SEEN FROM BEFORE AND THE INNER SIDE, AFTER REMOVING THE ULNAR AND MEDIAN NERVES.

The upper part of the internal or short head of the biceps flexor cubiti muscle was removed, while the lower part of the muscle was turned outwards, in order to display the nerves entering the biceps flexor cubiti and brachialis anticus muscles.



¹ Called by Macalister the *quadrilateral space*. See note ¹ to p. 312, in Part III.

² Called by Macalister the *subscapular triangle*. See note ¹ to p. 312, in Part III.

³ Sometimes called the *lower branch of the circumflex nerve*, but the name used in the text is more distinctive.

⁴ See Appendix, note 429.

FIG. 1256.—THE NERVES SUPPLYING THE MUSCLES OF THE SHOULDER-JOINT AND THE TRICEPS EXTENSOR CUBITI MUSCLE, ALSO THE CUTANEOUS OFFSETS OF THE CIRCUMFLEX AND MUSCULOSPIRAL NERVES, DISPLAYED FROM BEHIND. THE RAMIFICATION OF THE NERVE TO THE RHOMBOID MUSCLES (N. DORSALIS SCAPULÆ).

The spine of the scapula was sawn across, the detached segment was drawn outwards, and the supraspinatus and infraspinatus muscles were cut across. The external head of the triceps extensor cubiti muscle was divided by an oblique section, and the segments were drawn apart.

Nerves of the Shoulder and the Upper Arm.

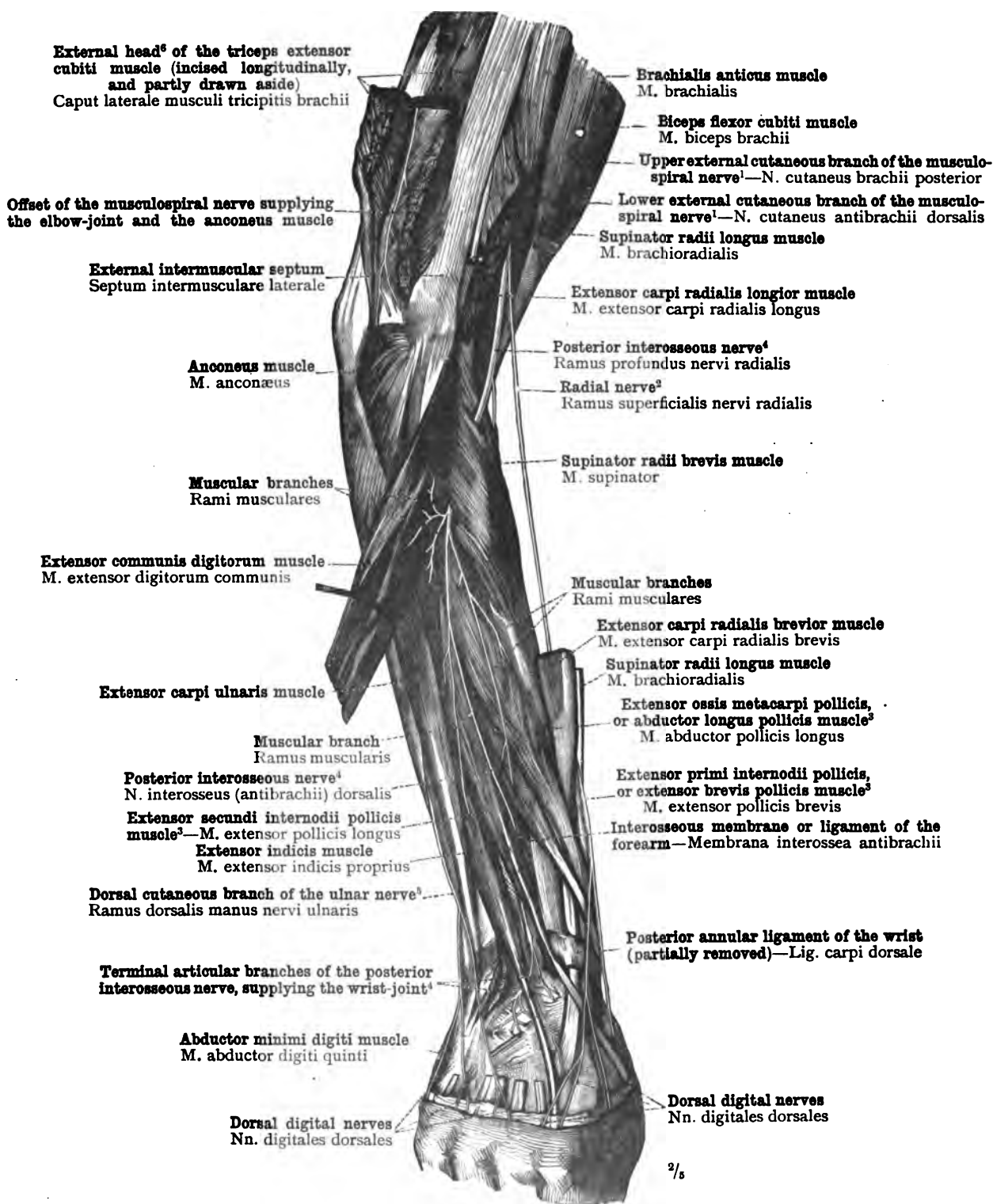


FIG. 1257.—THE DEEP NERVES OF THE DORSAL SIDE OF THE FOREARM. THE NERVE TO THE ANCONÆUS MUSCLE (A BRANCH OF THE MUSCULOSPIRAL NERVE) AND THE BRANCHES OF THIS NERVE TO THE ELBOW-JOINT WERE EXPOSED BY AN INCISION INTO THE EXTERNAL HEAD⁶ OF THE TRICEPS EXTENSOR CUBITI MUSCLE.

¹ See Appendix, note 429.

² See Appendix, note 430.

³ See note ² to p. 326, in Part III.

⁴ See Appendix, note 431.

⁵ Also called *dorsal branch of the ulnar nerve* and *dorsal cutaneous nerve of the hand*, but both these names are less distinctive than that used in the text, which is employed by Macalister.

⁶ See Appendix, note 432.

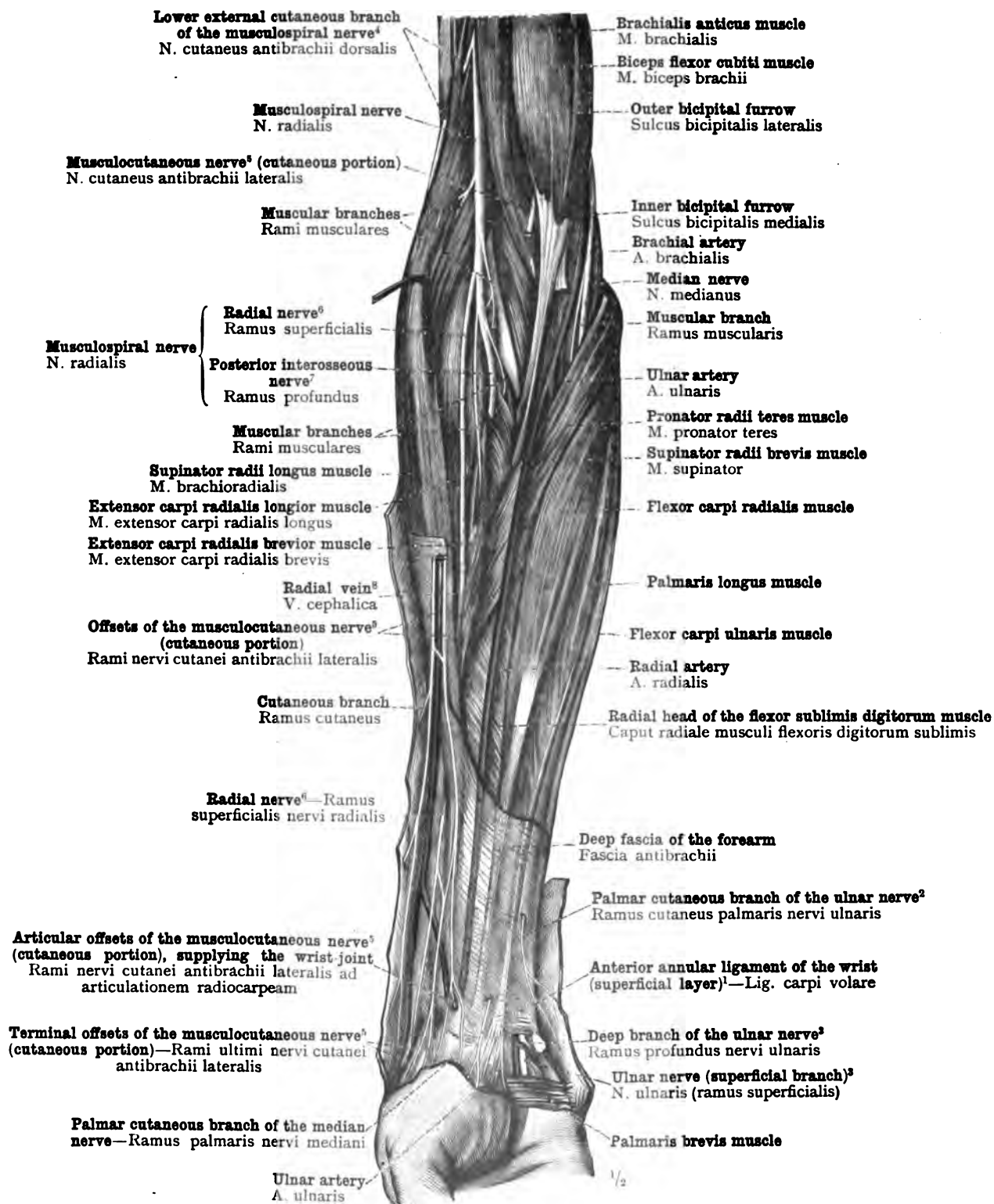


FIG. 1258.—THE DEEP NERVES OF THE PALMAR SIDE OF THE FOREARM, MORE ESPECIALLY THE COURSE AND DISTRIBUTION OF THE MUSCULOSPIRAL NERVE, DISPLAYED BY THE REMOVAL OF THE DEEP FASCIA OF THE FOREARM.

¹ See Appendix to Part V., note 274.

² In Ellis's "Demonstrations of Anatomy" this branch is called the *cutaneous nerve of the forearm and hand*—a name greatly lacking in precision.

³ See Appendix, note 433.

⁴ See Appendix, note 429.

⁵ Sometimes called the *external cutaneous nerve*.

⁶ See Appendix, note 430.

⁷ See Appendix, note 431.

⁸ Called by Macalister the *superficial radial vein*. With regard to the author's use of the term *ven. cephalica*, see Appendix to Part V., note 395.

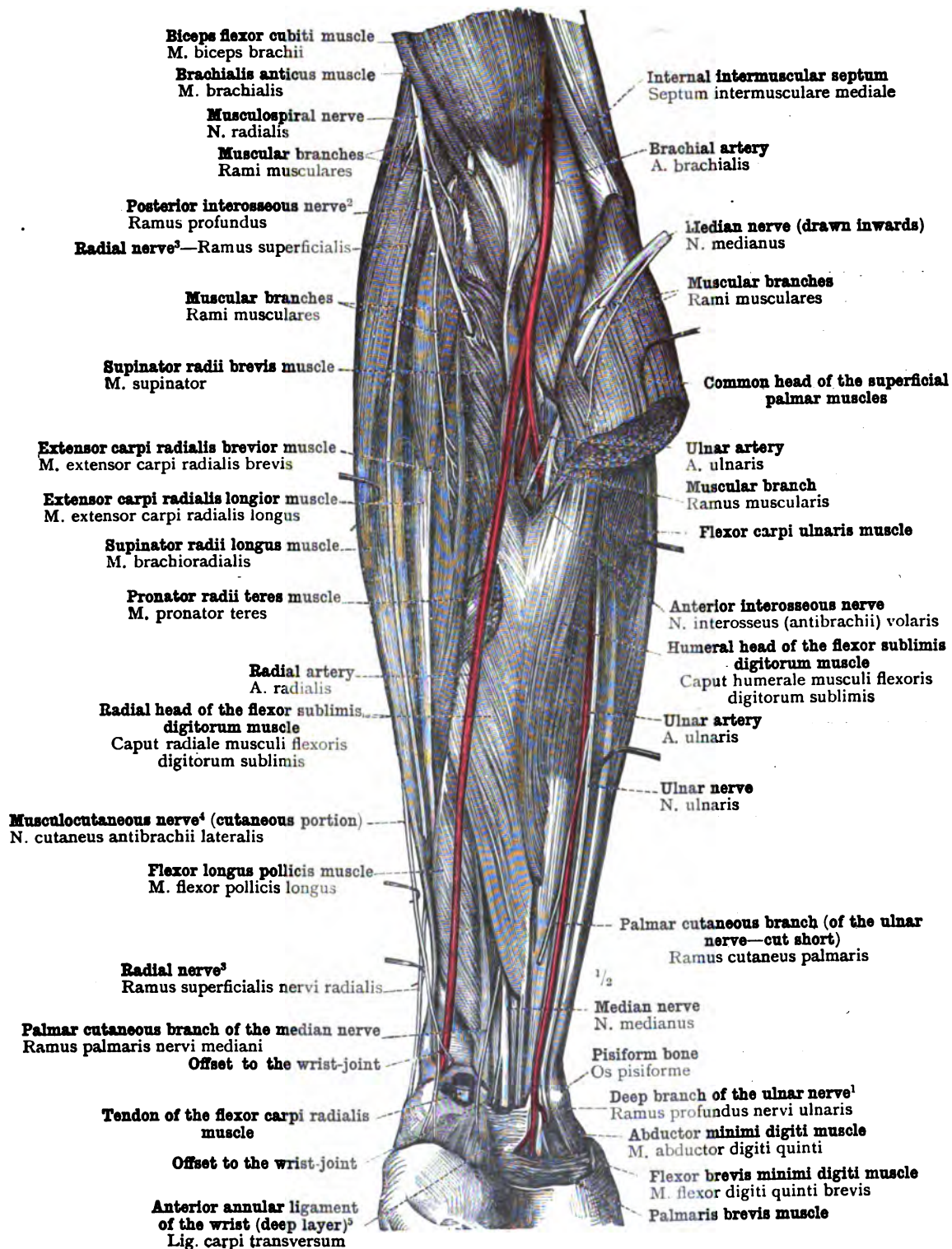
¹ See Appendix, note 433.⁴ Sometimes called the *external cutaneous nerve*.² See Appendix, note 431.³ See Appendix, note 430.⁵ See Appendix to Part V., note 214.

FIG. 1259.—THE DEEP NERVES OF THE PALMAR SIDE OF THE FOREARM, DISPLAYED BY THE PARTIAL REMOVAL OF THE PRONATOR RADII TERES, FLEXOR CARPI RADIALIS, AND PALMARIS LONGUS MUSCLES. THE PASSAGE OF THE MEDIAN NERVE BETWEEN THE TWO HEADS OF THE PRONATOR RADII TERES MUSCLE.

The muscles of the radial group (supinator and extensor muscles) have been separated a little one from another.

Nerves of the Forearm.

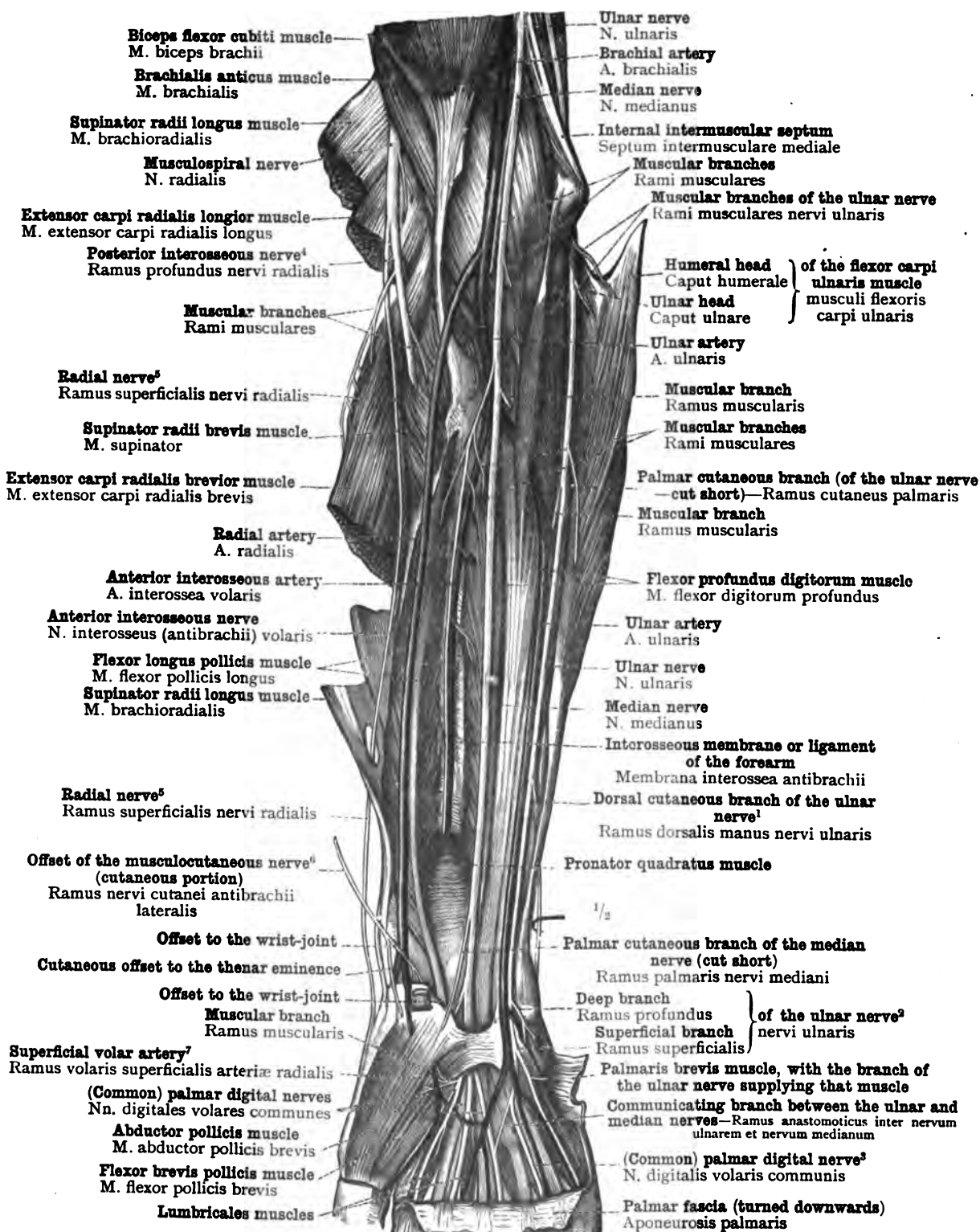
¹ See note 5 to p. 825.² See Appendix, note 433.³ See Appendix, note 434.⁴ See Appendix, note 435.⁵ See Appendix, note 430.⁶ Sometimes called the *external cutaneous nerve*.⁷ Often known in England by the Latin name of *superficialis volæ artery*.

FIG. 1260.—THE DEEP NERVES OF THE PALMAR SIDE OF THE FOREARM, DISPLAYED BY THE REMOVAL OF THE FLEXOR SUBLIMIS DIGITORUM, SUPINATOR RADII LONGUS, EXTENSOR CARPI RADIALIS LONGIOR, AND EXTENSOR CARPI RADIALIS BREVIOR MUSCLES.

The flexor longus pollicis muscle has been drawn apart from the flexor profundus digitorum muscle.

Nerves of the Forearm.

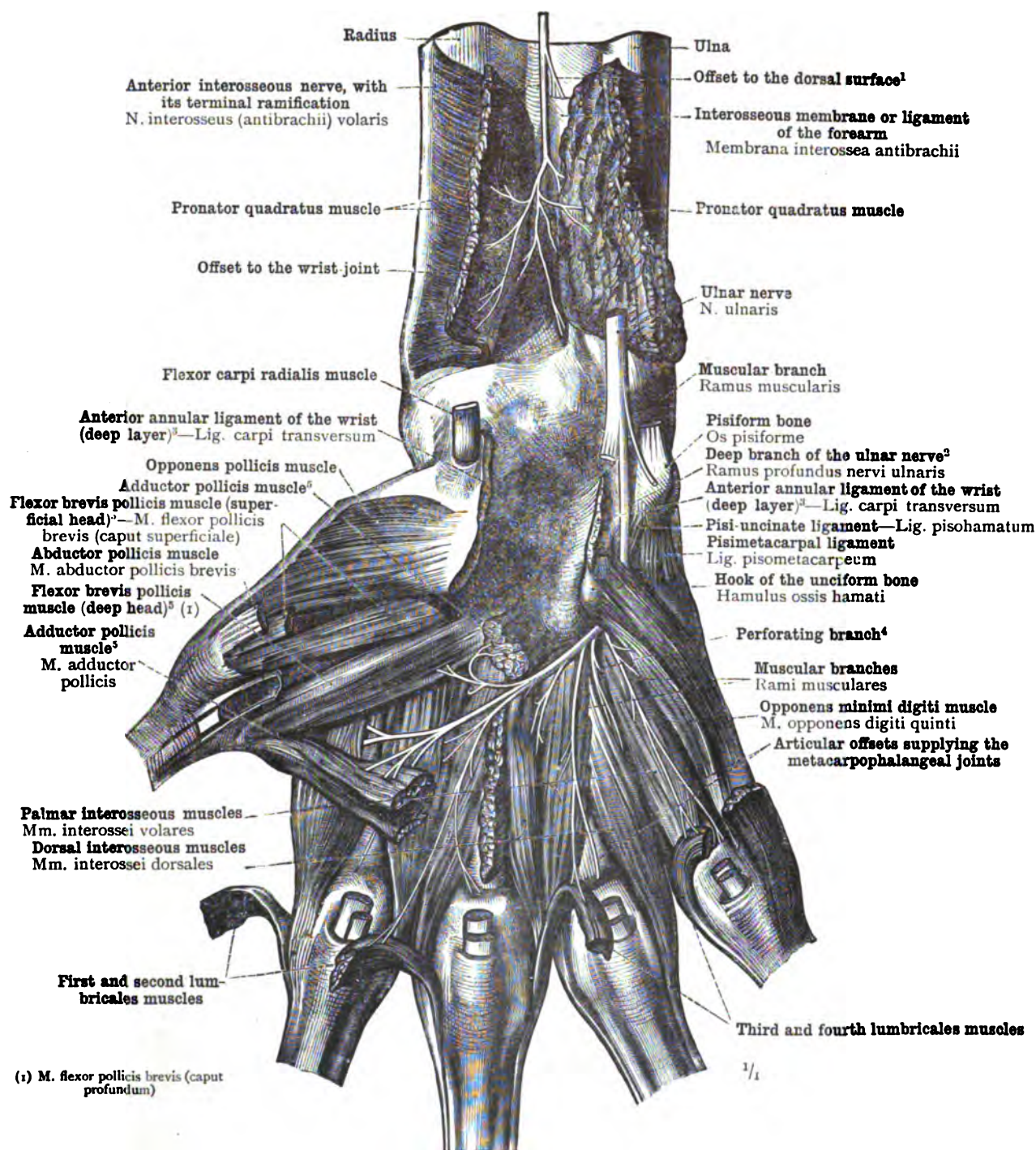
¹ Not mentioned by Quain or Macalister.² See Appendix, note 433.³ See Appendix to Part V., note 214.⁴ See Appendix, note 435.⁵ See note ² to p. 324, in Part III.

FIG. 1261.—THE TERMINAL RAMIFICATION OF THE ANTERIOR INTEROSSEOUS NERVE, N. INTEROSSEUS (ANTI-BRACHII) VOLARIS, IN THE SUBSTANCE OF THE PRONATOR QUADRATUS MUSCLE, AND THE ARTICULAR BRANCH OF THIS NERVE TO THE WRIST-JOINT. THE DISTRIBUTION OF THE DEEP BRANCH OF THE ULNAR NERVE (see Appendix, note 433) TO THE MUSCLES OF THE METACARPUS AND TO THE METACARPOPHALANGEAL JOINTS.

The terminal ramification of the anterior interosseous nerve was exposed by making a vertical incision through the middle of the pronator quadratus muscle and drawing the segments apart. To expose the deep branch of the ulnar nerve in the palm of the hand, partial removal of the muscles of the thenar eminence was required.

Nerves of the Forearm and the Metacarpus.

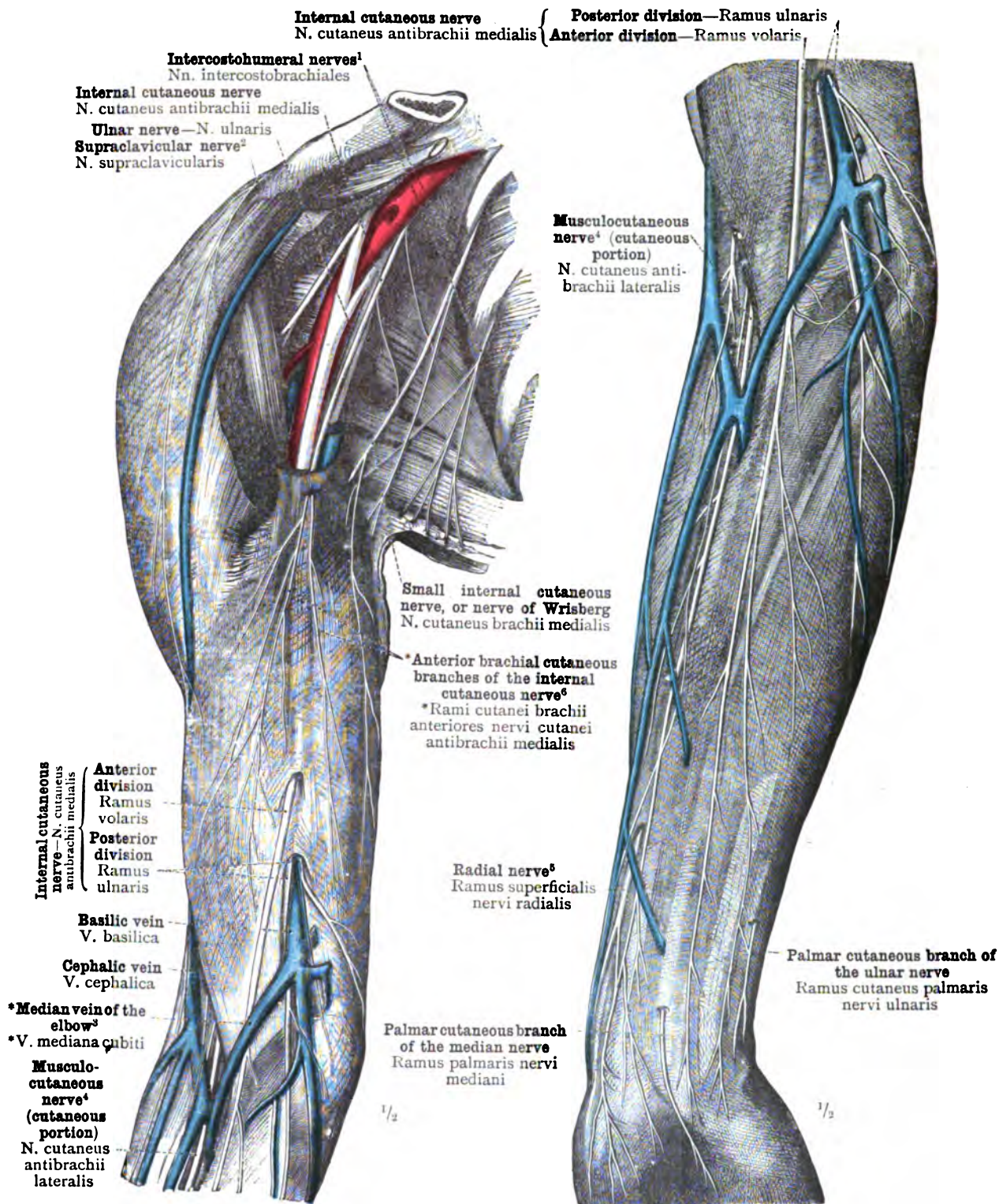


FIG. 1262.—THE CUTANEOUS NERVES OF THE ANTERIOR AND INNER SIDES OF THE UPPER ARM.

FIG. 1263.—THE CUTANEOUS NERVES OF THE PALMAR SURFACE OF THE FOREARM.

¹ See description at the foot of Fig. 1247, p. 815.⁴ Sometimes called the *external cutaneous nerve*.² See note ⁴ to p. 817.⁵ See Appendix, note 430.³ See Appendix to Part V., note 308.⁶ See Appendix, note 436.

Cutaneous Nerves of the Upper Limb.

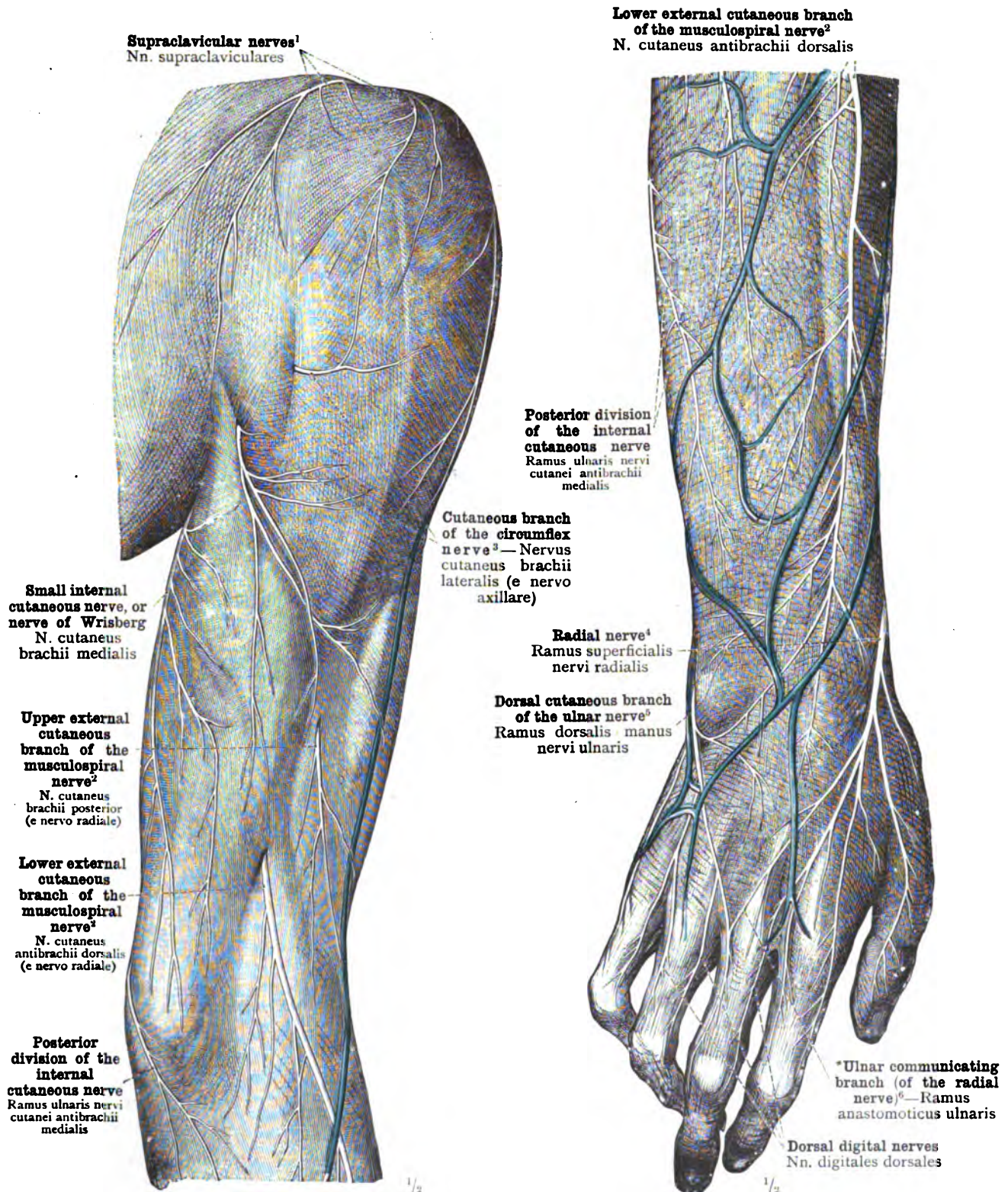


FIG. 1264.—THE CUTANEOUS NERVES OF THE BACK OF THE UPPER ARM.

FIG. 1265.—THE CUTANEOUS NERVES OF THE BACK OF THE FOREARM AND HAND.

¹ The hindmost of these nerves is distinguished as the *external* or *posterior branch* of the *supraclavicular nerves*, or as the *supra-acromial nerve*.
² See note ⁴ to p. 817.
³ Sometimes called the *lower branch* of the *circumflex nerve*, but the name used in the text is more distinctive.
⁴ See Appendix, note 437.
⁵ See note 5 to p. 825.
⁶ See Appendix, note 437.

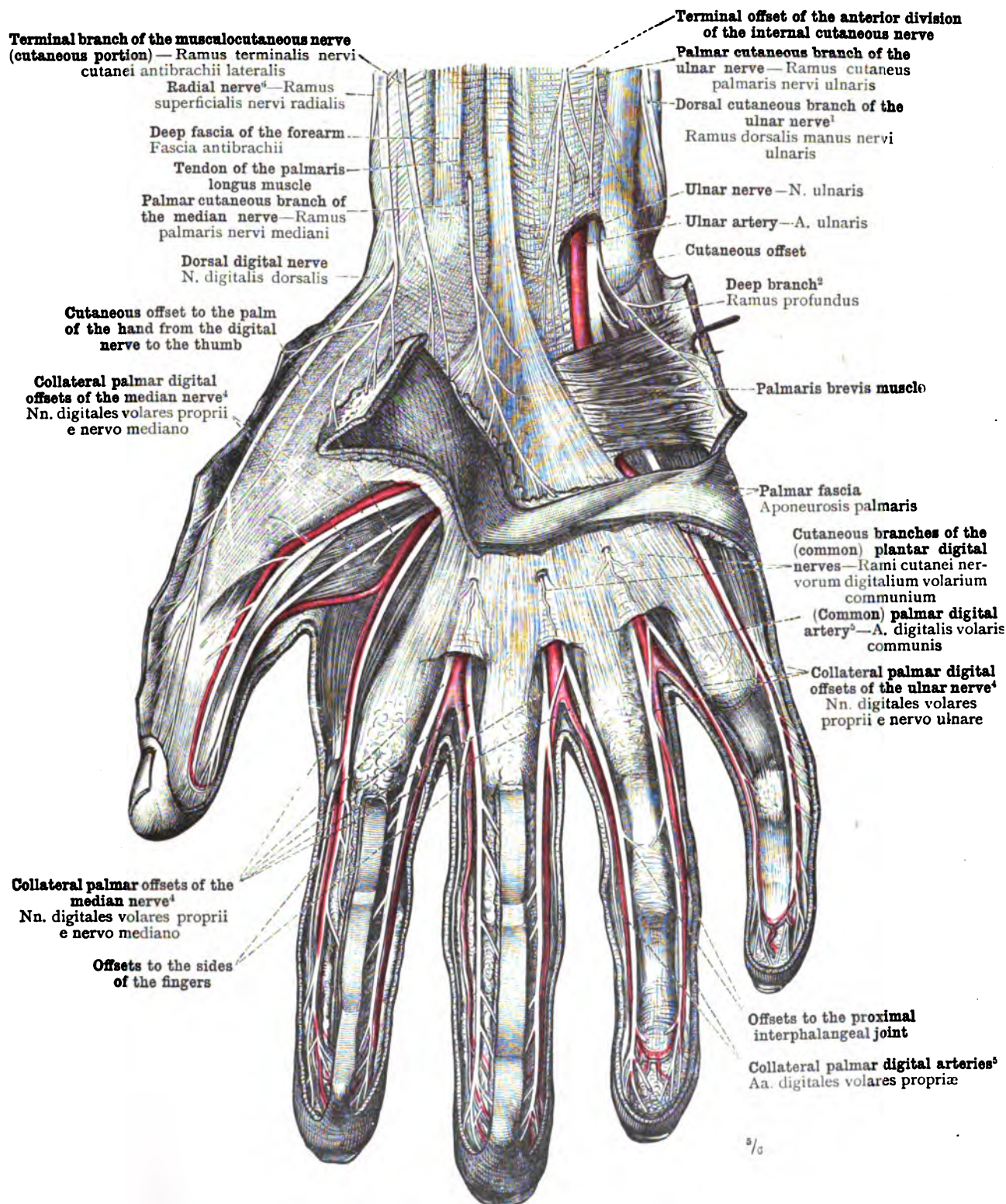


FIG. 1267.—THE SUPERFICIAL NERVES OF THE PALMAR SURFACE OF THE METACARPUS AND THE FINGERS.

¹ See note 5 to p. 825.

⁴ See Appendix, note 4.4.

² See Appendix, note 433.

⁵ See Appendix to Part V., note 213.

³ Sometimes called the *external cutaneous nerve*.

⁶ See Appendix, note 43².

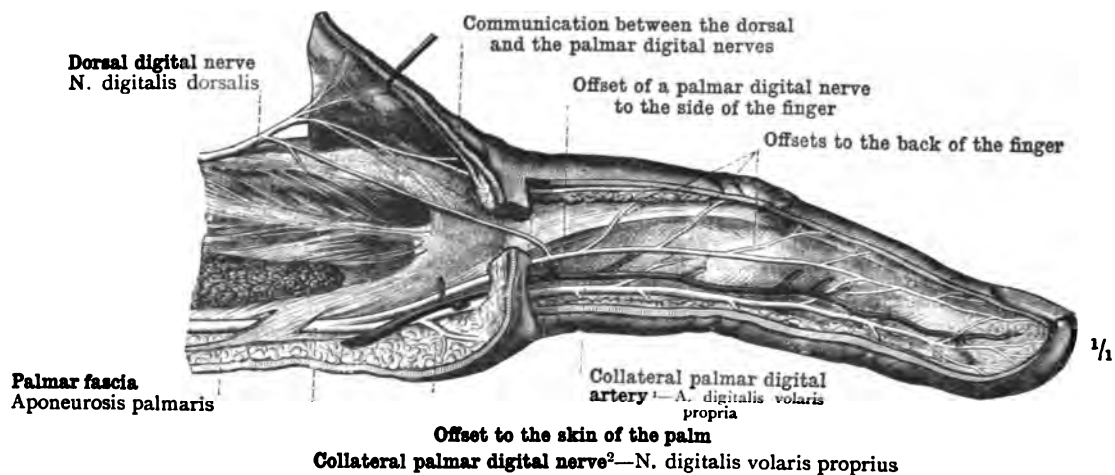


FIG. 1268.—THE PALMAR AND DORSAL NERVES OF THE RIGHT MIDDLE FINGER, SEEN FROM THE ULNAR SIDE

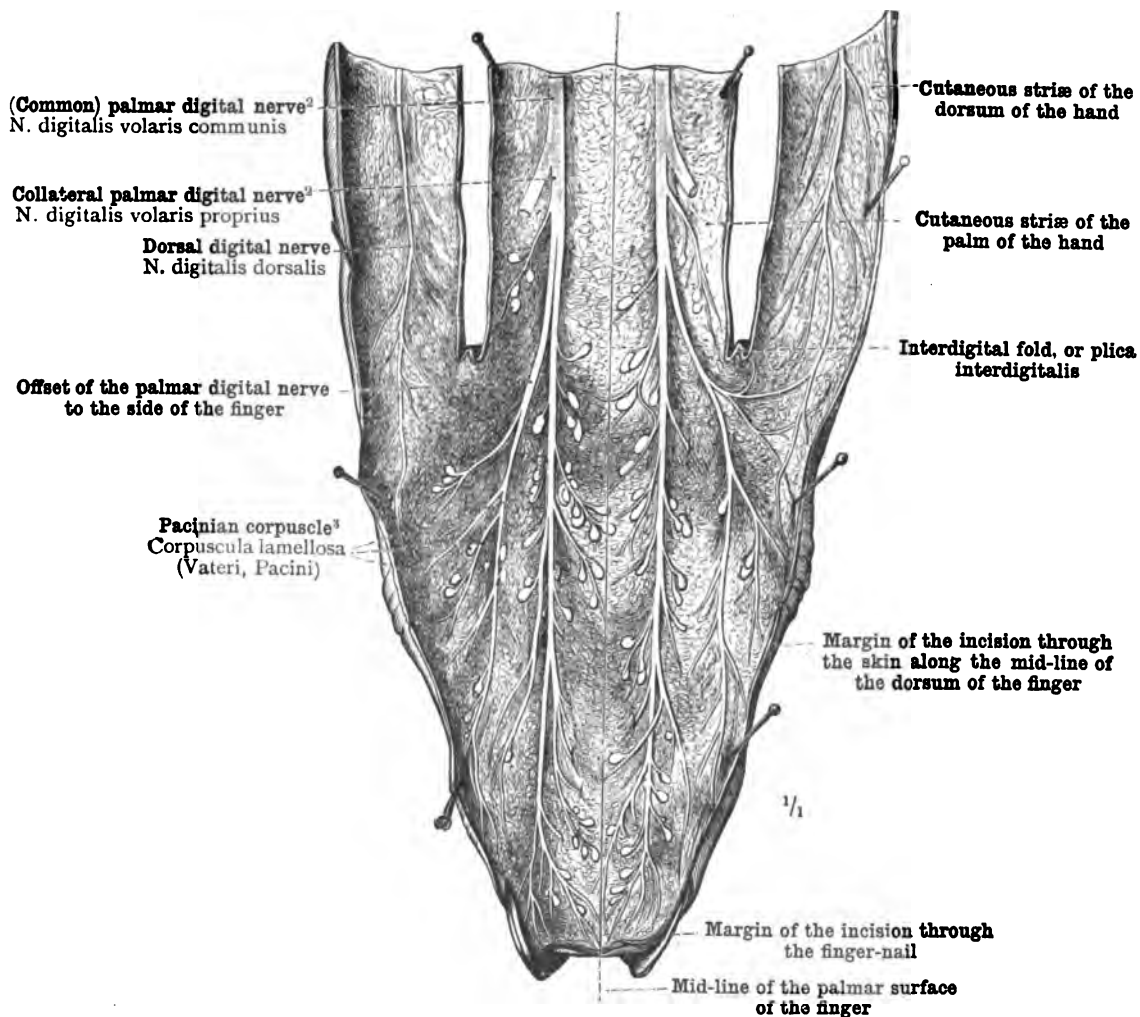


FIG. 1269.—THE PALMAR AND DORSAL NERVES OF THE MIDDLE FINGER, AS SEEN IN THE DETACHED SKIN. PACINIAN CORPUSCLES (see note ³ below).

¹ See Appendix to Part V., note 213.

² See Appendix, note 434.

³ Called also *Pacinian body*, and sometimes *corpuscle of Vater*. See Appendix, note 325.

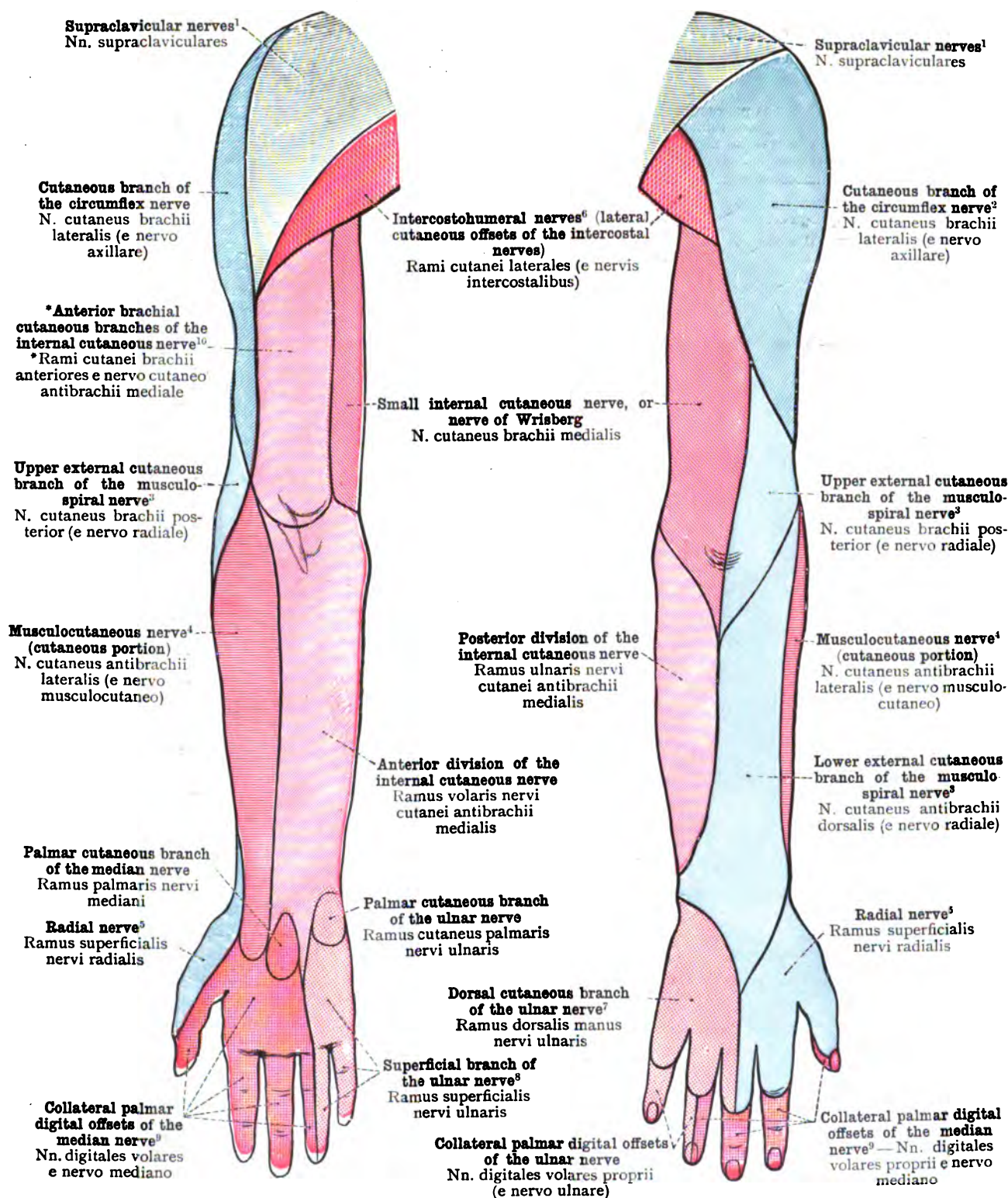


FIG. 1270.—THE CUTANEOUS AREAS OF THE BRACHIAL NERVES ON THE ANTERIOR OR PALMAR SURFACE OF THE UPPER EXTREMITY.

FIG. 1271.—THE CUTANEOUS AREAS OF THE BRACHIAL NERVES ON THE POSTERIOR OR DORSAL SURFACE OF THE UPPER EXTREMITY.

¹ See note 4 to p. 817.

³ See Appendix, note 42.

⁵ See Appendix, note 43.

⁷ See note 5 to p. 825.

² Sometimes called the *lower branch of the circumflex nerve*, but the name used in the text is more distinctive.

⁴ Sometimes called the *external cutaneous nerve*.

⁶ See description at the foot of Fig. 1247, p. 815.

⁸ See Appendix, note 433.

⁹ See Appendix, note 434.

¹⁰ See Appendix, note 436.

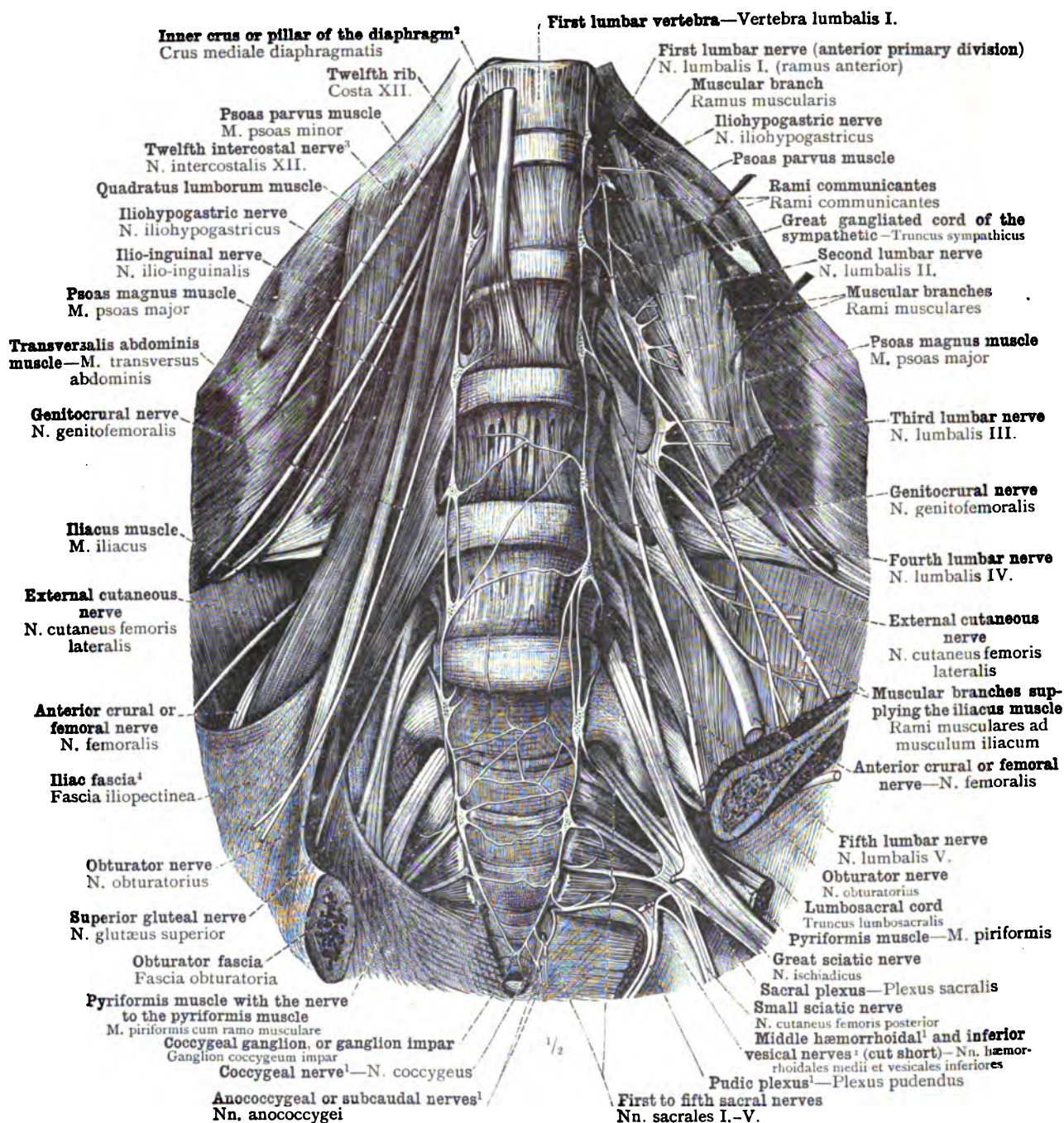


FIG. 1272.—THE *LUMBOSACRAL PLEXUS, PLEXUS LUMBOSACRALIS, COMPRISING THE LUMBAR PLEXUS, PLEXUS LUMBALIS, THE SACRAL PLEXUS, PLEXUS SACRALIS, AND THE PUDIC PLEXUS, PLEXUS PUDENDUS (see Appendix, note ⁴³⁸). THE FORMATION OF THE LUMBAR PLEXUS, PLEXUS LUMBALIS, OUT OF THE ANTERIOR PRIMARY DIVISIONS OF THE FIRST, SECOND, THIRD, AND PART OF THE FOURTH LUMBAR NERVES; THE JUNCTION OF THE REMAINING PORTION OF THE FOURTH LUMBAR NERVE (NERVUS FURCALIS) WITH THE FIFTH LUMBAR NERVE TO FORM THE LUMBOSACRAL CORD, TRUNCUS LUMBOSACRALIS. THE FORMATION OF THE SACRAL PLEXUS, PLEXUS SACRALIS (see Appendix, note ⁴³⁸), OUT OF THE LUMBOSACRAL CORD AND THE ANTERIOR PRIMARY DIVISIONS OF THE FIRST, SECOND, AND THIRD SACRAL NERVES. THE FORMATION OF THE PUDIC PLEXUS, PLEXUS PUDENDUS, OUT OF PORTIONS OF THE THIRD, FOURTH, AND FIFTH SACRAL NERVES.

On the left side of the body the psoas magnus and psoas parvus muscles were detached from the bodies of the lumbar vertebrae, and the great sacrosciatic foramen, foramen ischiadicum majus, was opened from before by the removal of a large segment of the hip-bone.

¹ See Appendix, note ⁴³⁸.

³ Sometimes distinguished as the *subcostal nerve*.

² See note ¹ to p. 286, in Part III.

⁴ See note ¹ to p. 390, in Part III.

*Plexus lumbosacralis—*Lumbosacral plexus.

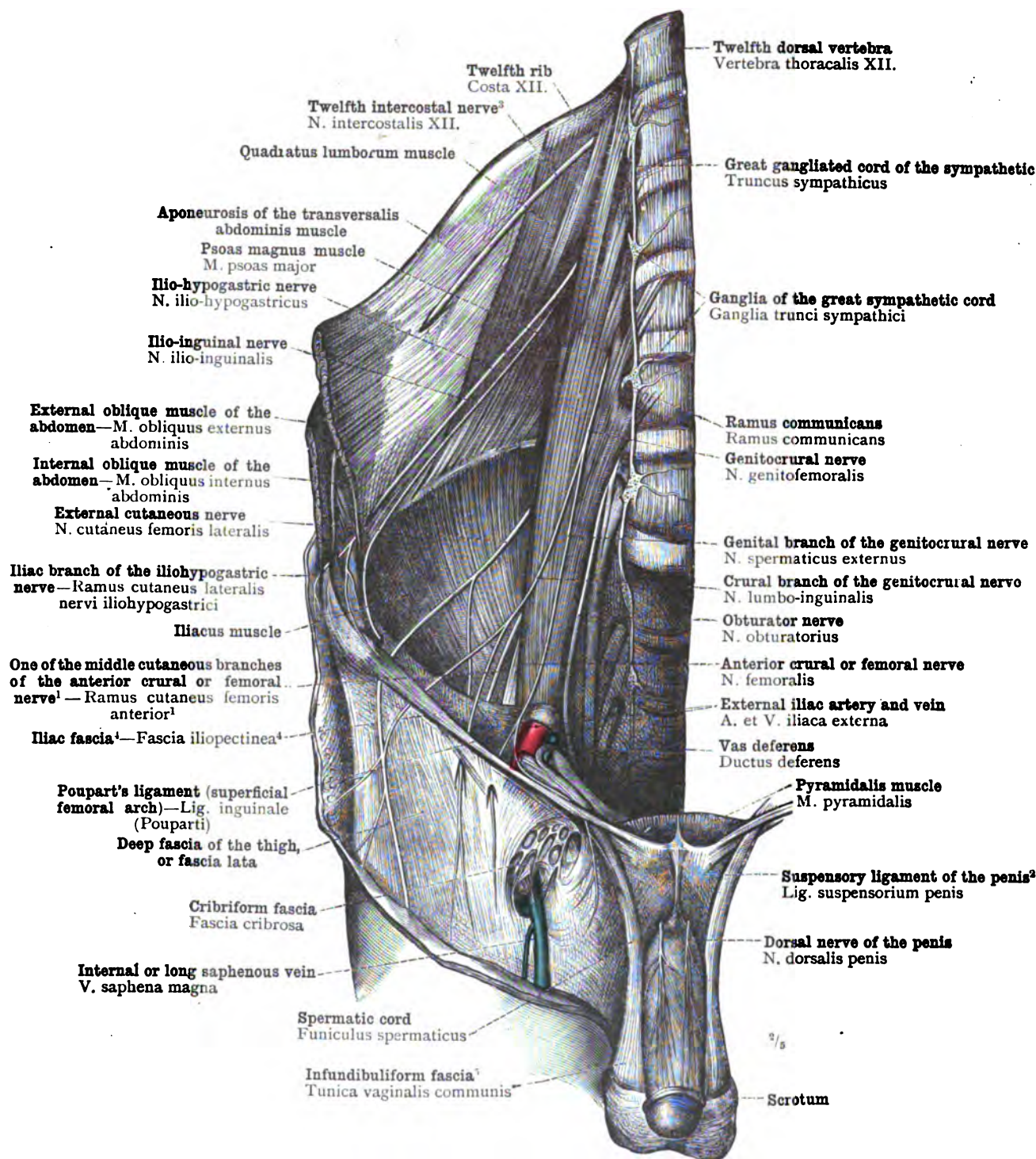


FIG. 1273.—THE NERVES ARISING FROM THE LUMBAR PLEXUS, AND THE PASSAGE OF THE GENITOCRURAL AND EXTERNAL CUTANEOUS NERVES (NN. GENITOFEMORALIS ET CUTANEUS FEMORIS LATERALIS) INTO THE THIGH. THE RAMIFICATION OF THE DORSAL NERVE OF THE PENIS (N. DORSALIS PENIS) ON THE DORSUM OF THE PENIS.

The ilio-inguinal nerve has been cut short just above the anterior superior spine of the ilium.

¹ See Appendix, note 430.

² Sometimes distinguished as the *true suspensory ligament of the penis*, or *deep part of the suspensory ligament of the penis*; in the author's nomenclature, however, the *false suspensory ligament of the penis*, or *superficial part of the suspensory ligament of the penis*, is designated *ligamentum fundiforme penis*. See note ² to p. 362, in Part III.

³ Sometimes distinguished as the *subcostal nerve*.

⁴ See note ¹ to p. 390, in Part III.

⁵ See Appendix to Part IV., note 68.

Nerves of the Lumbar Plexus.

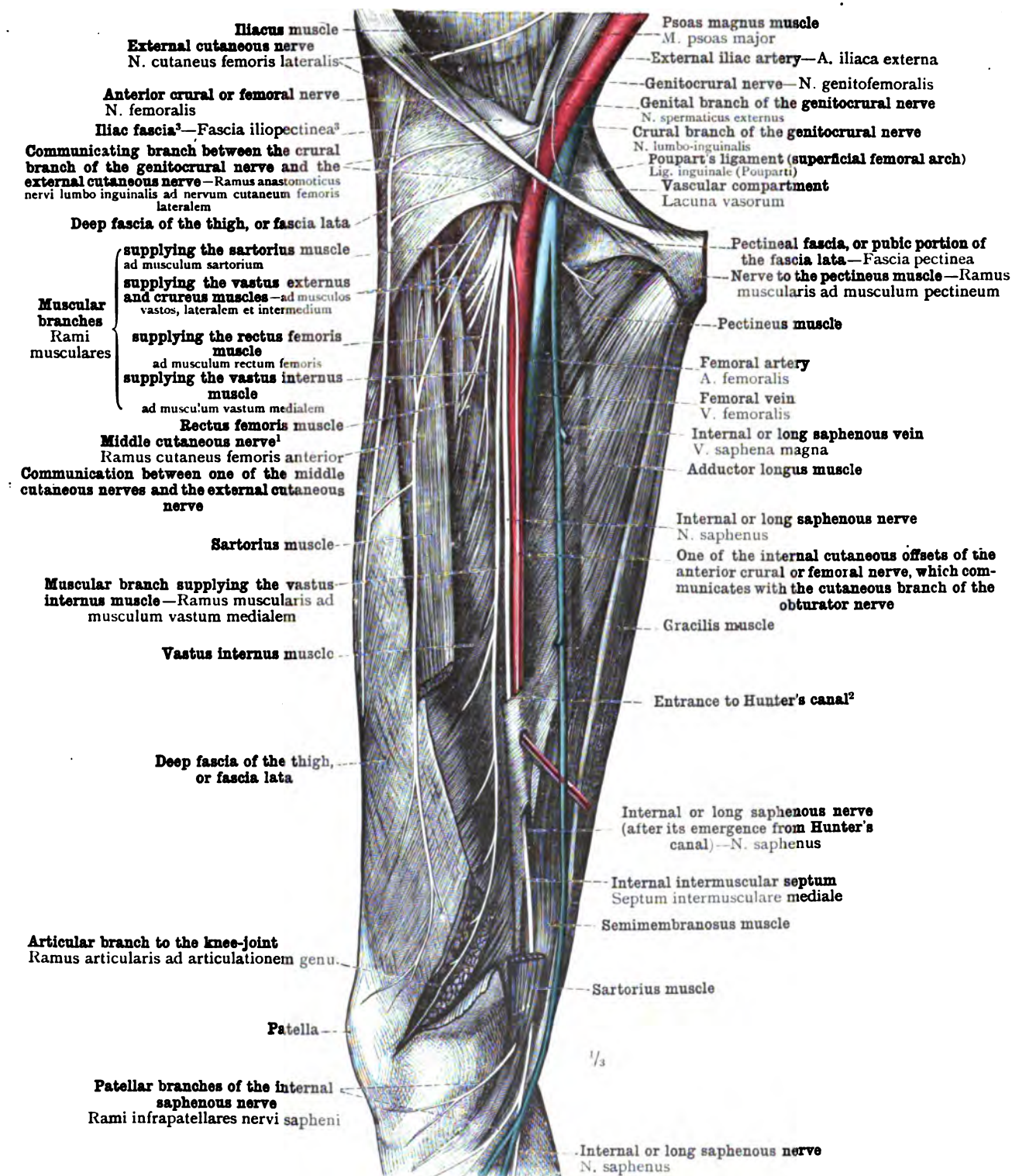


FIG. 1274.—THE DISTRIBUTION OF THE ANTERIOR CRURAL OR FEMORAL NERVE (N. FEMORALIS) ON THE FRONT OF THE THIGH, DISPLAYED BY THE PARTIAL REMOVAL OF THE SARTORIUS MUSCLE; THE ARTICULAR BRANCH TO THE KNEE-JOINT WAS EXPOSED BY MEANS OF AN INCISION IN THE VASTUS INTERNUS MUSCLE.

¹ See Appendix, note 439.

² According to English anatomists, the upper aperture of Hunter's canal (canalis adductorius Hunteri) is not at the point here shown, but much higher up in the thigh, at the apex of Scarpa's triangle. See Appendix to Part V., note 228.

³ See note ¹ to p. 390, in Part III.

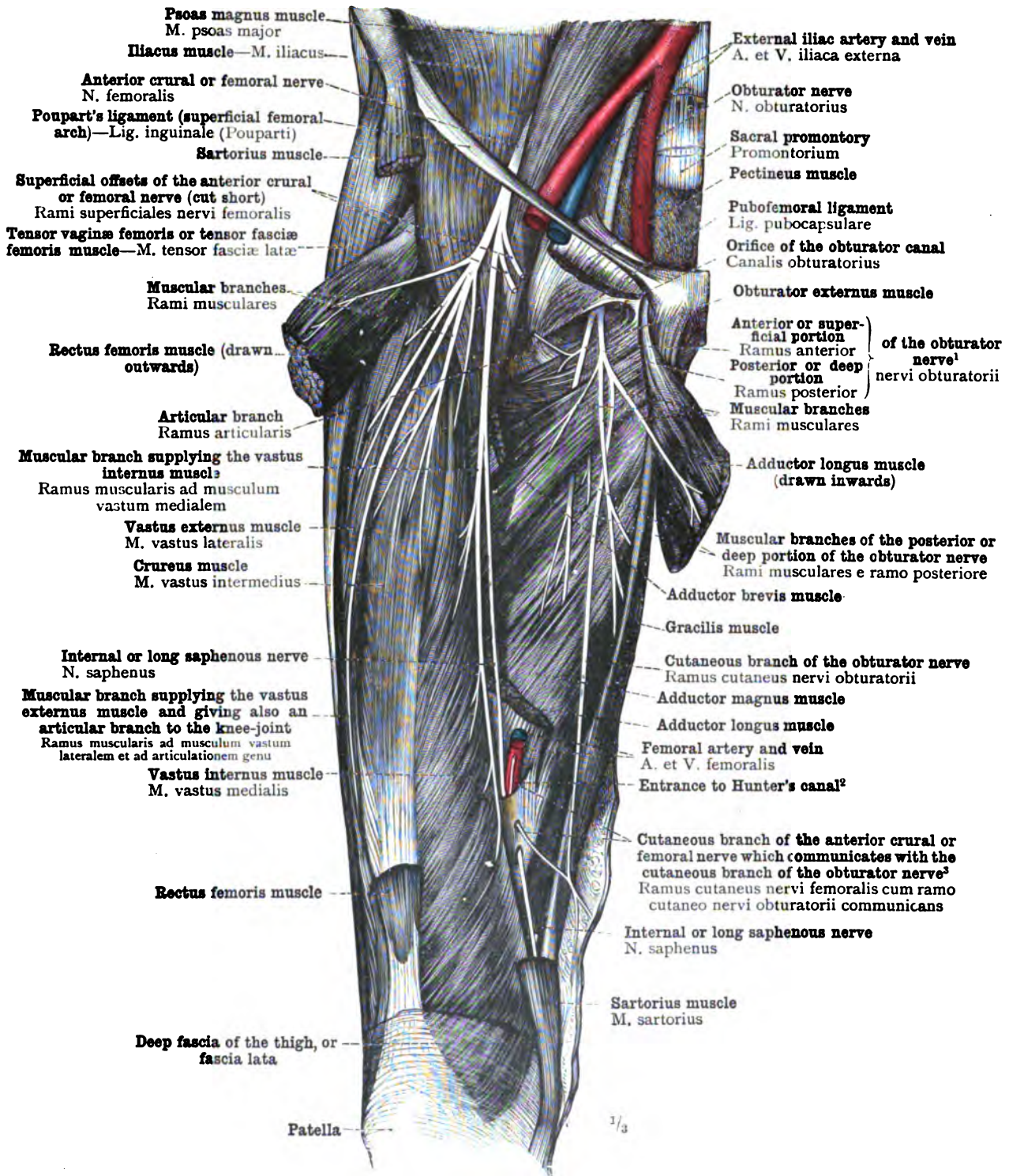
¹ See Appendix, note 440.² See note ² to p. 838.³ See Appendix, note 441.

FIG. 1275.—THE DISTRIBUTION OF THE ANTERIOR CRURAL OR FEMORAL NERVE (NERVUS FEMORALIS) AND THE OBTURATOR NERVE (NERVUS OBTURATORIUS), DISPLAYED FROM BEFORE BY THE PARTIAL REMOVAL OF THE SARTORIUS, RECTUS FEMORIS, ADDUCTOR LONGUS, AND PECTINEUS MUSCLES.

The Deeper Nerves of the Thigh.

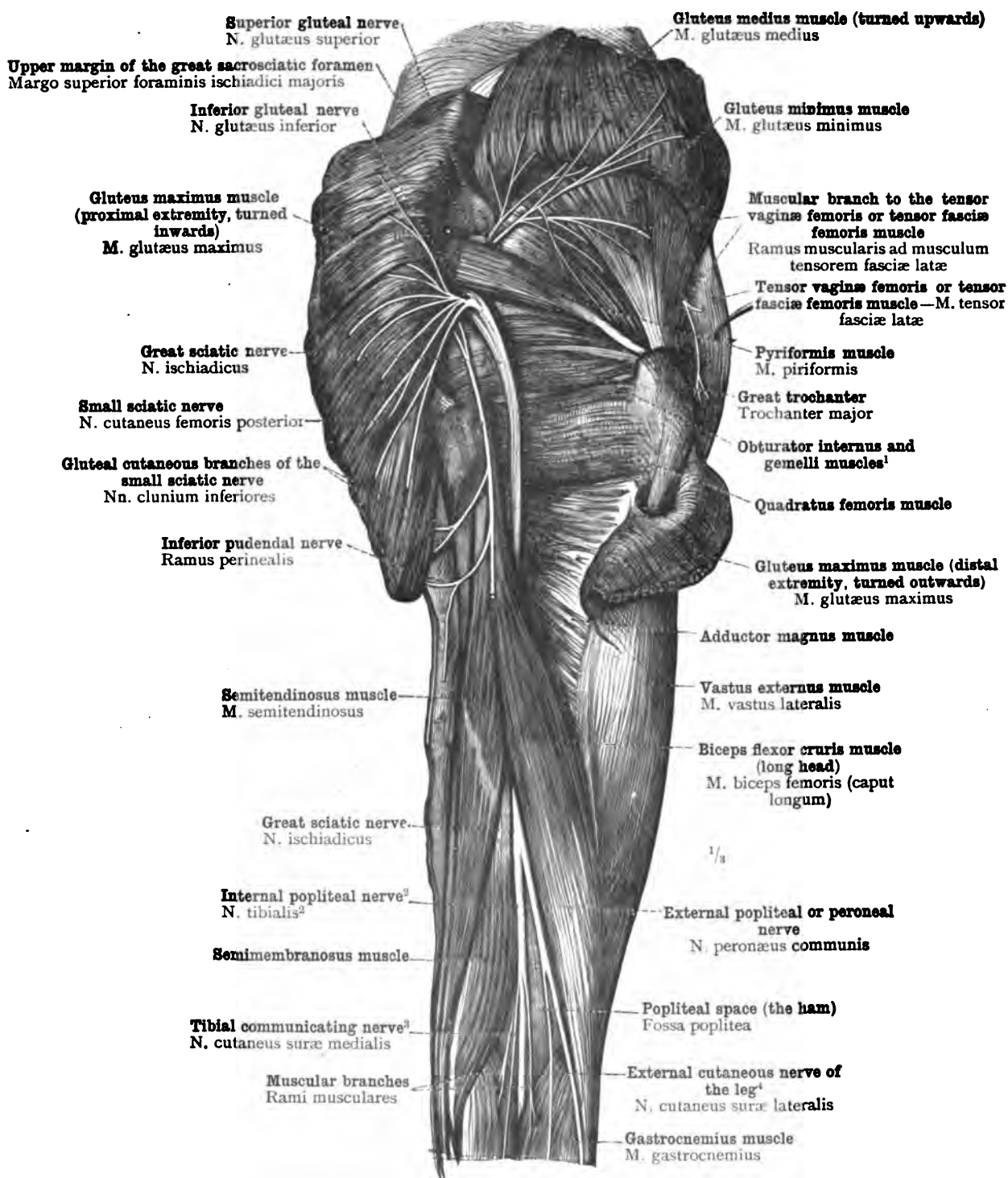


FIG. 1276.—THE SUPERIOR AND INFERIOR GLUTEAL NERVES, NN. GLUTÆI SUPERIOR ET INFERIOR, AND THEIR BRANCHES TO THE THREE GLUTEAL MUSCLES AND TO THE TENSOR VAGINÆ FEMORIS OR TENSOR FASCIÆ FEMORIS MUSCLE, M. TENSOR FASCIÆ LATÆ. THE COURSE OF THE GREAT SCIATIC NERVE, N. ISCHIADICUS, FROM THE GLUTEAL REGION DOWN THE BACK OF THE THIGH, AND ITS DIVISION INTO THE INTERNAL POPLITEAL NERVE (see Appendix, note ⁴²), N. TIBIALIS, AND THE EXTERNAL POPLITEAL OR PERONEAL NERVE, N. PERONÆUS COMMUNIS.

The gluteus maximus and gluteus medius muscles have been cut across, the segments of the former muscle having been turned inwards and outwards, respectively, while the latter muscle, which was divided close to its insertion, has been turned upwards.

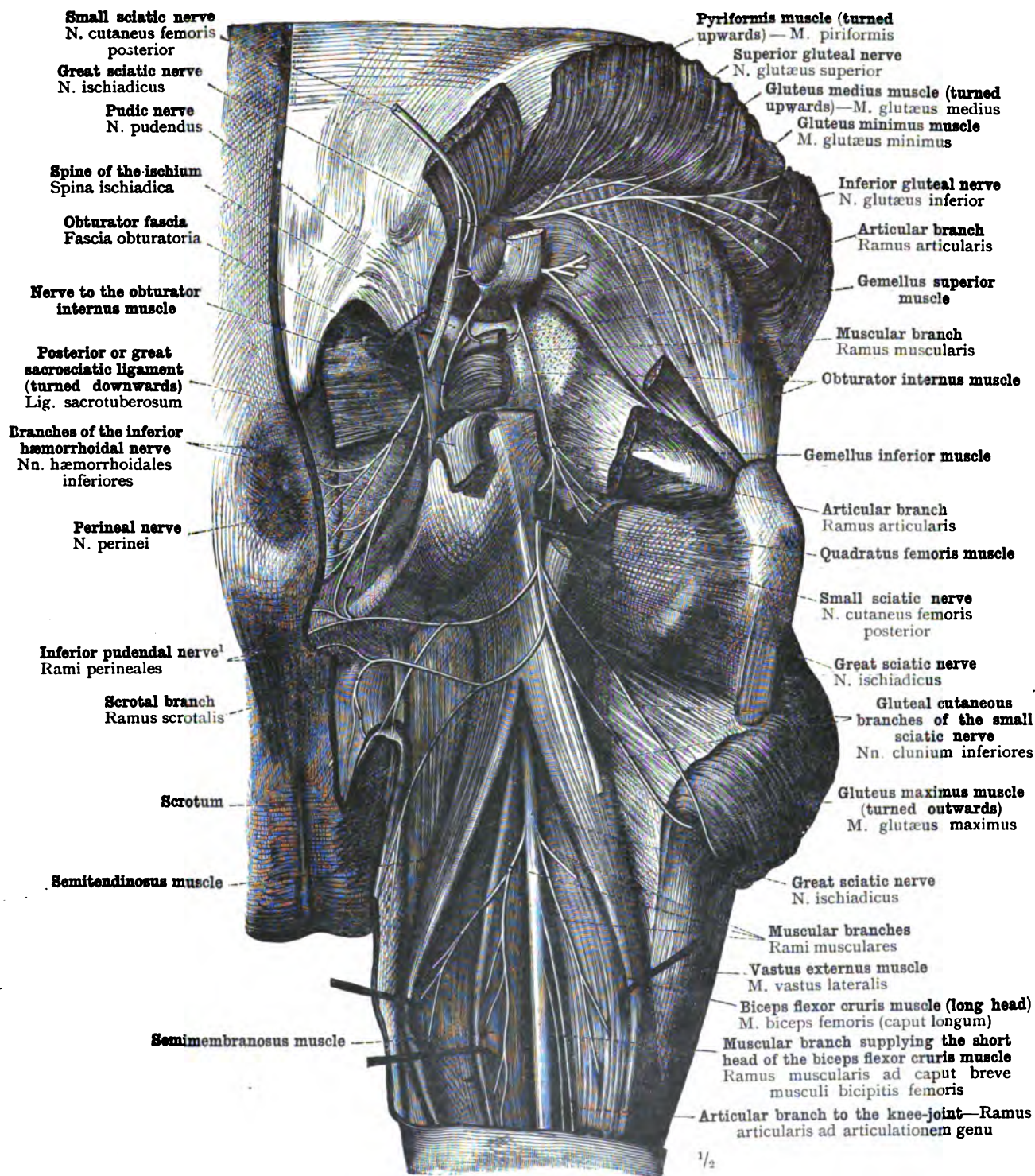
¹ See note ¹ to p. 340, in Part III.

² See Appendix, note 442.

³ Sometimes known in England as the *communicans tibialis* nerve.

⁴ Quain calls this nerve the *lateral cutaneous nerve of the leg*, but gives no reason for departing from his ordinary usage of the word *external* to describe the relation in question.

The Deep Nerves of the Hip and the Thigh.



¹ See Appendix, note 443.

FIG. 1277.—THE NERVES SUPPLYING THE DEEP MUSCLES OF THE GLUTEAL REGION AND THE SKIN OF THE PERINEAL REGION. THE COURSE OF THE PUDIC NERVE, N. PUDENDUS, OVER THE SPINE OF THE ISCHIUM, SPINA ISCHIADICA, AND THROUGH THE OBTURATOR FASCIA INTO THE ISCHIORECTAL FOSSA.

The great and small sciatic nerves (nervus ischiadicus et nervus cutaneus femoris posterior) have been cut across and their proximal portions turned upwards. The posterior or great sacrosclatic ligament, ligamentum sacrotuberosum, has been cut across, and detached from the obturator fascia.

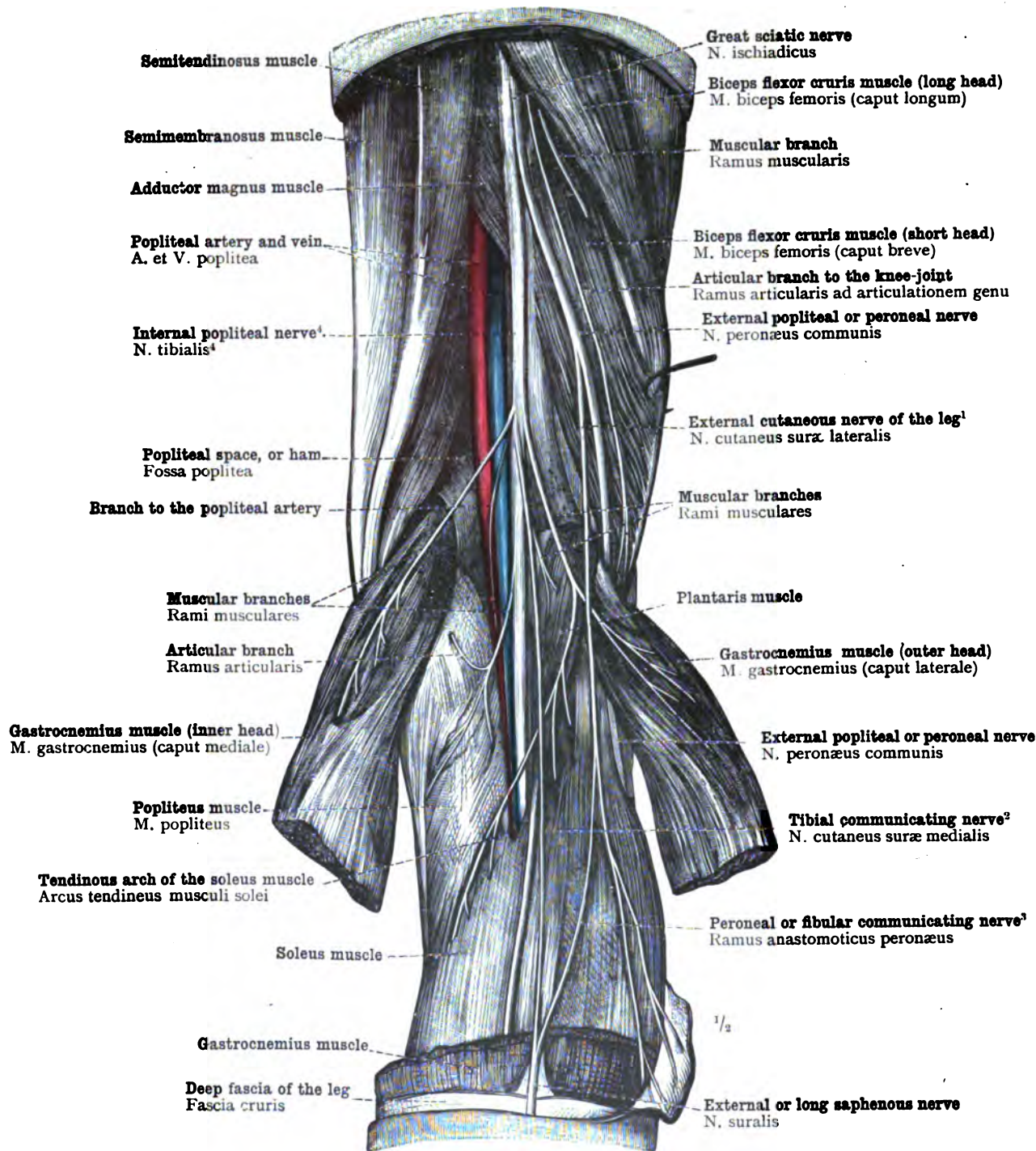


FIG. 1278.—DIVISION OF THE GREAT SCIATIC NERVE, N. ISCHIADICUS, INTO THE INTERNAL POPLITEAL NERVE, N. TIBIALIS (see Appendix, note ⁴), AND THE EXTERNAL POPLITEAL OR PERONEAL NERVE, N. PERONÆUS COMMUNIS. THE RELATIONS OF THE INTERNAL POPLITEAL NERVE TO THE POPLITEAL ARTERY AND VEIN, AND THE RELATIONS ALSO TO THESE VESSELS OF THE MUSCULAR BRANCHES GIVEN OFF IN THE POPLITEAL SPACE. THE EXTERNAL CUTANEOUS NERVE OF THE LEG, N. CUTANEUS SURÆ LATERALIS, GIVES OFF THE PERONEAL OR FIBULAR COMMUNICATING NERVE, RAMUS ANASTOMOTICUS PERONÆUS; FROM THE INTERNAL POPLITEAL NERVE IS DERIVED THE TIBIAL COMMUNICATING NERVE, N. CUTANEUS SURÆ MEDIALIS; THESE TWO COMMUNICATING NERVES UNITE, IN THIS SPECIMEN NEAR THE TOP OF THE CALF, TO FORM THE EXTERNAL SAPHENOUS NERVE, N. SURALIS.

The heads of the gastrocnemius muscle have been cut across and turned inwards and outwards respectively, thus exposing the popliteus, soleus, and plantaris muscles, as well as the tendon of the last-named muscle.

¹ See note 4 to p. 840.

² Sometimes known in England as the *communicans tibialis nerve*.

³ Sometimes known in England as the *communicans fibularis nerve*.

⁴ See Appendix, note ⁴.

⁵ See note 7 to p. 363, in Part III.

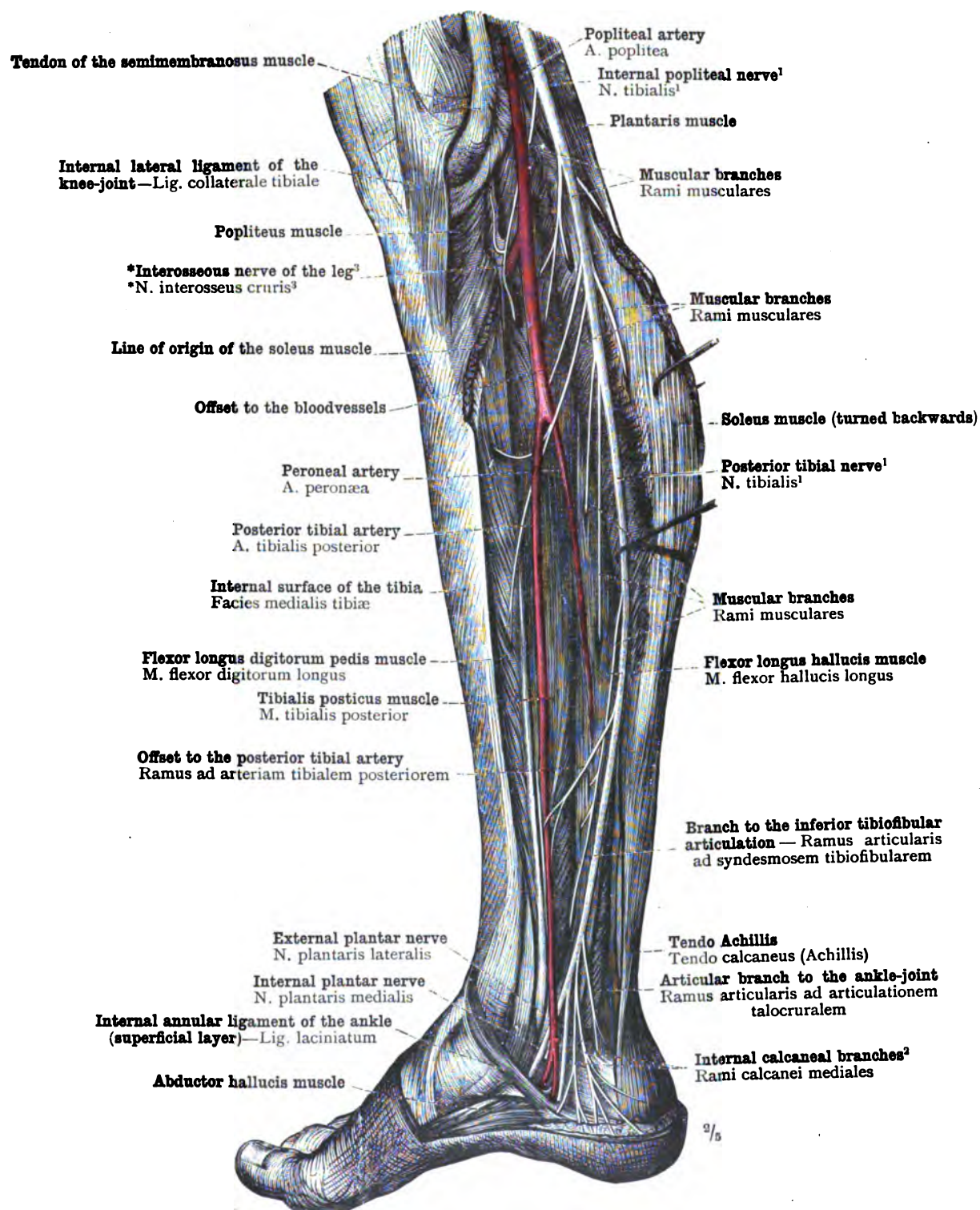
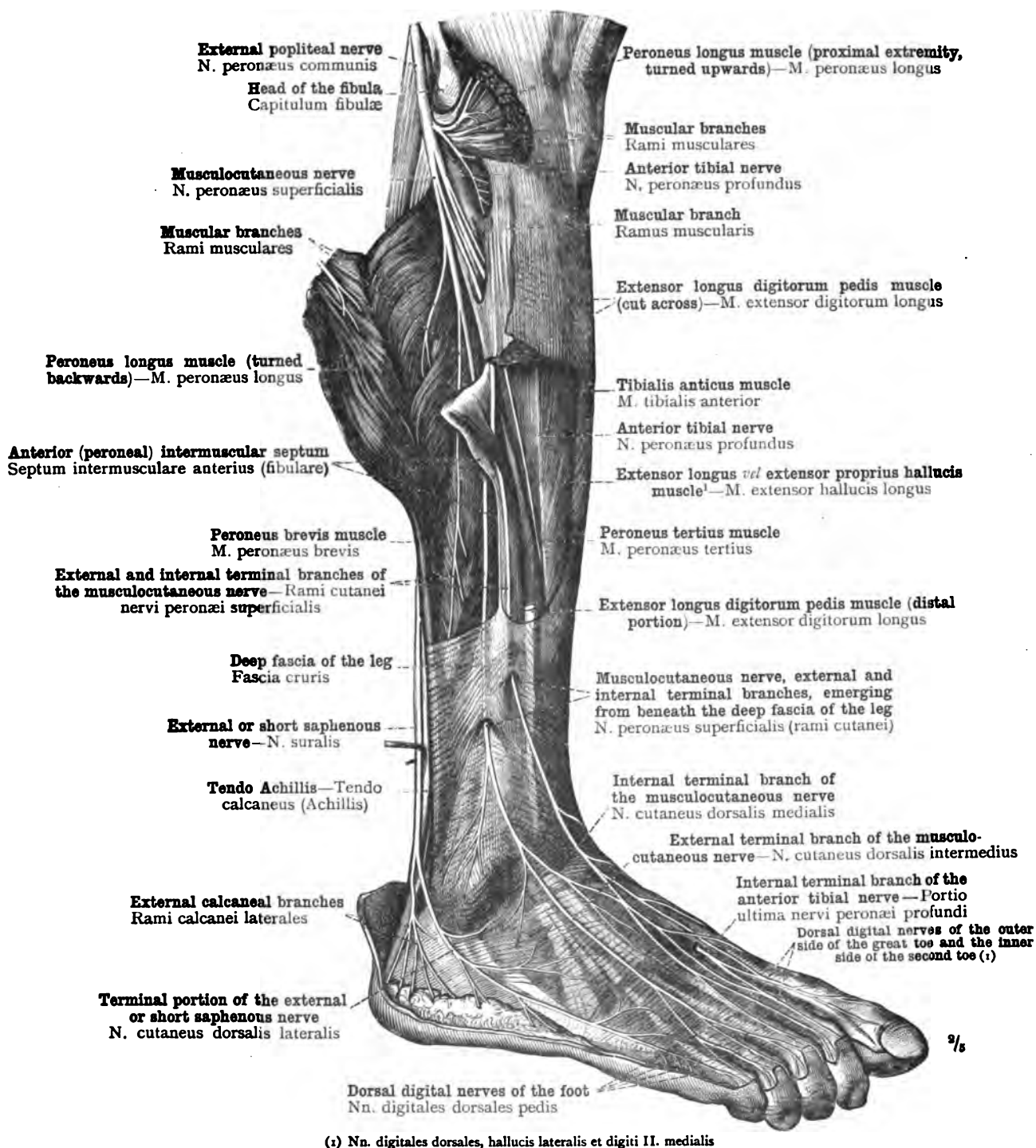
¹ See Appendix, note 442.² See Appendix, note 444.³ See Appendix, note 445.

FIG. 1279.—THE BRANCHES OF THE INTERNAL POPLITEAL NERVE (N. TIBIALIS) AND ITS CONTINUATION, THE POSTERIOR TIBIAL NERVE (N. TIBIALIS—see Appendix, note 442), TO THE DEEP MUSCLES OF THE BACK OF THE LEG AND TO THE SKIN OF THE CALCANEAL REGION; THE DIVISION OF THE POSTERIOR TIBIAL NERVE INTO THE EXTERNAL AND INTERNAL PLANTAR NERVES (NN. PLANTARES, LATERALIS ET MEDIALIS). SEEN FROM THE INNER SIDE.

The soleus muscle has been detached from its tibial origin and turned backwards.

Nerves of the Leg.



(1) Nn. digitales dorsales, hallucis lateralis et digiti II. medialis

* See note 2 to p. 364, in Part III.

FIG. 1280.—THE DISTRIBUTION OF THE EXTERNAL POPLITEAL OR PERONEAL NERVE, ITS BRANCHES TO THE PERONEUS LONGUS AND PERONEUS BREVIS MUSCLES, AND ITS CUTANEOUS BRANCH TO THE DORSUM OF THE FOOT, THE MUSCULOCUTANEOUS NERVE, N. PERONÆUS SUPERFICIALIS, WHICH DIVIDES (IN THIS SPECIMEN) A LITTLE BELOW THE KNEE INTO EXTERNAL AND INTERNAL TERMINAL BRANCHES, NN. CUTANEI DORSALES, MEDIALIS ET INTERMEDIUS. THE DISTRIBUTION OF THESE TWO CUTANEOUS NERVES AND OF THE EXTERNAL OR SHORT SAPHENOUS NERVE, N. SURALIS, THE TERMINAL PORTION OF WHICH (AS THE N. CUTANEUS DORSALIS LATERALIS) SUPPLIES THE SKIN OF THE OUTER SIDE OF THE DORSUM OF THE FOOT. THE INTERNAL TERMINAL BRANCH OF THE ANTERIOR TIBIAL NERVE, SUPPLYING THE ADJACENT SIDES OF THE FIRST AND SECOND TOES, IS ALSO SEEN. VIEWED FROM THE OUTER SIDE.

The peroneus longus muscle has been incised above, and the margins of the incision have been well separated.

Nerves of the Leg and Foot.

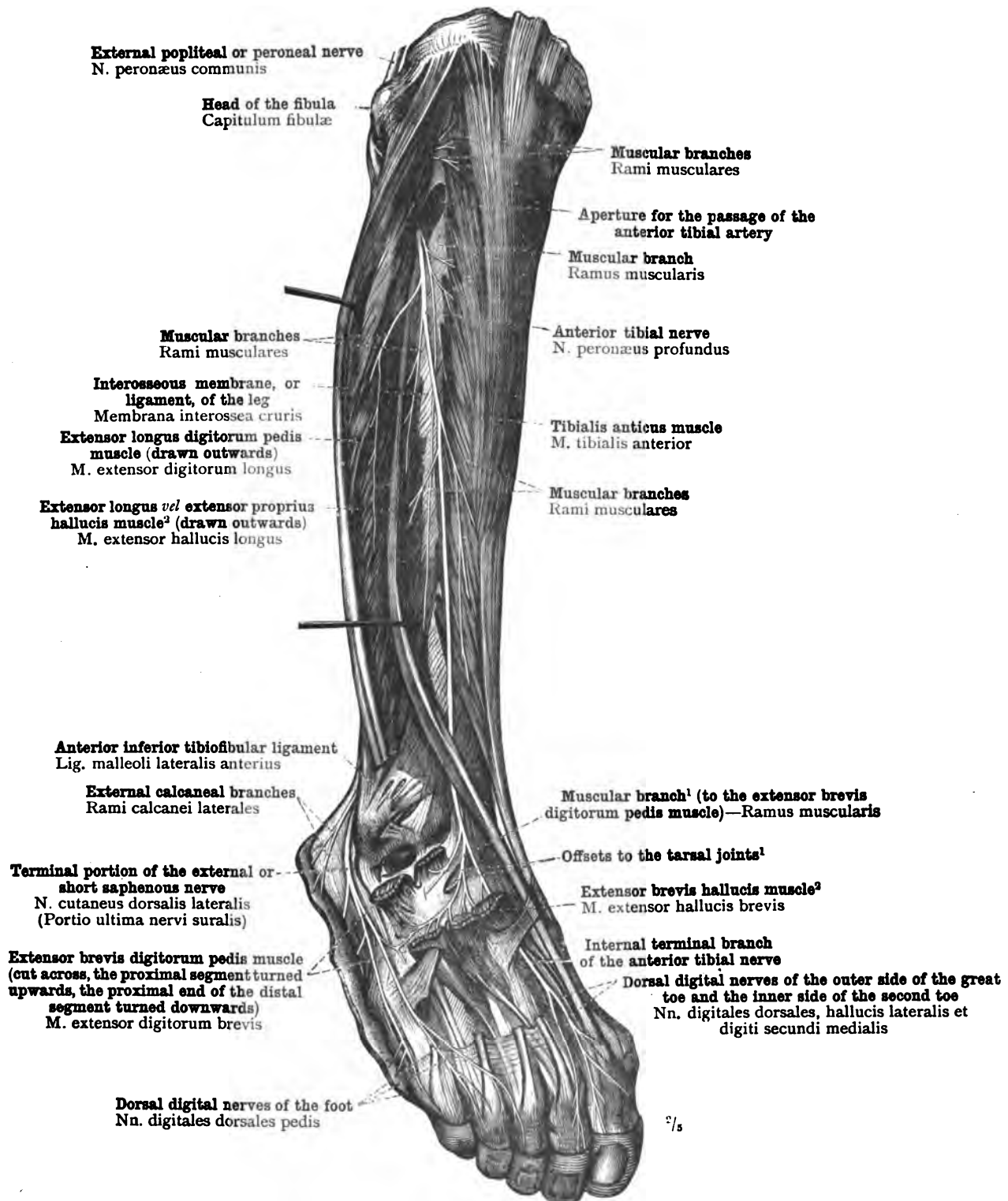


FIG. 1281.—THE ANTERIOR TIBIAL NERVE, N. PERONÆUS PROFUNDUS, AND ITS DISTRIBUTION TO THE MUSCLES OF THE FRONT OF THE LEG AND THE DORSUM OF THE FOOT. THE DISTRIBUTION ON THE FOOT OF THE TERMINAL PORTION OF THE EXTERNAL OR SHORT SAPHENOUS NERVE; IN THIS SPECIMEN THE CUTANEOUS AREA OF THIS NERVE EXTENDS TO THE FOURTH AND THIRD TOES, WHEREAS IN THE SPECIMEN DEPICTED IN FIG. 1280 THIS AREA IS LIMITED TO THE OUTER SIDE OF THE LITTLE TOE.

Nerves of the Leg and Foot.

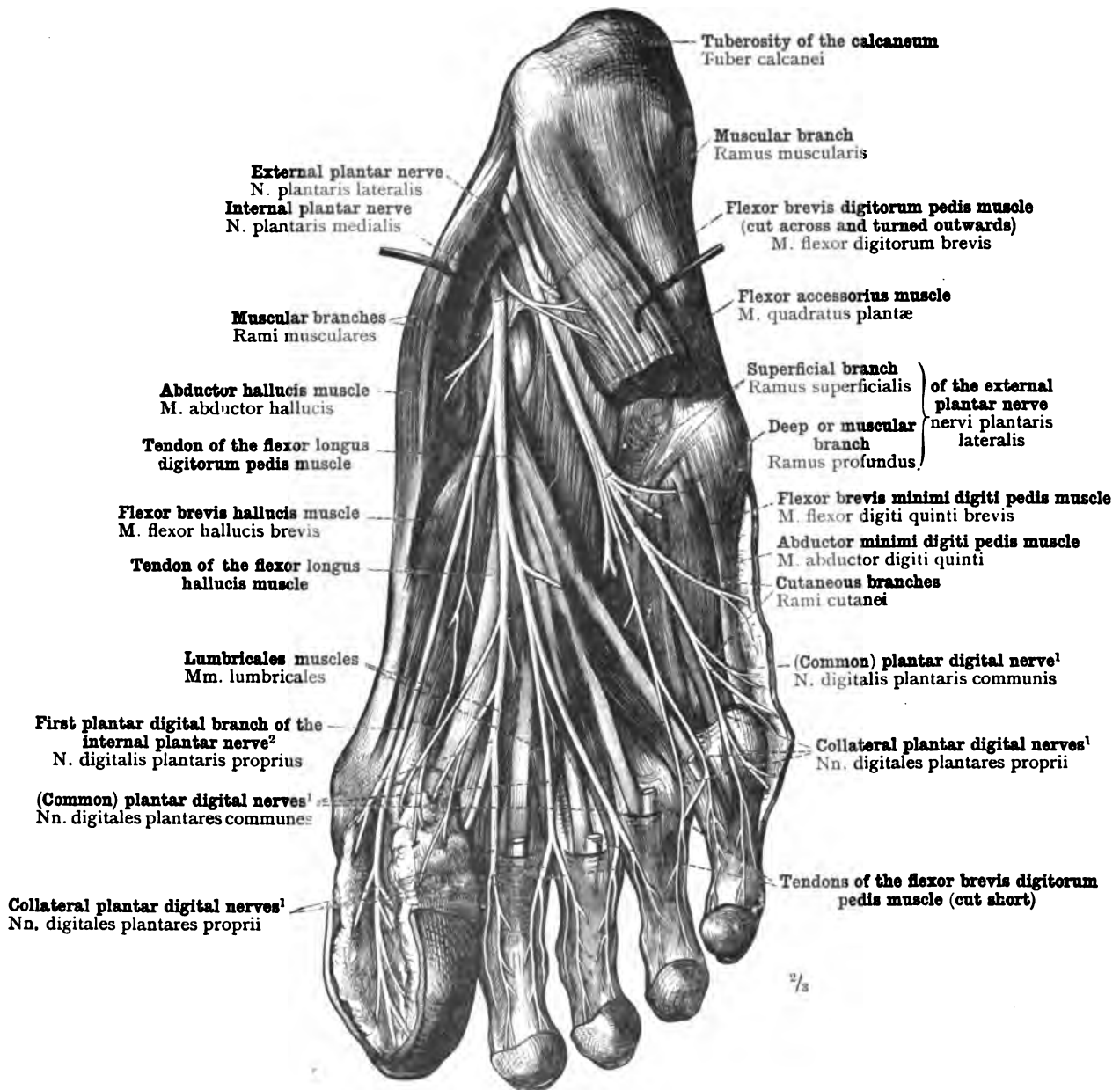
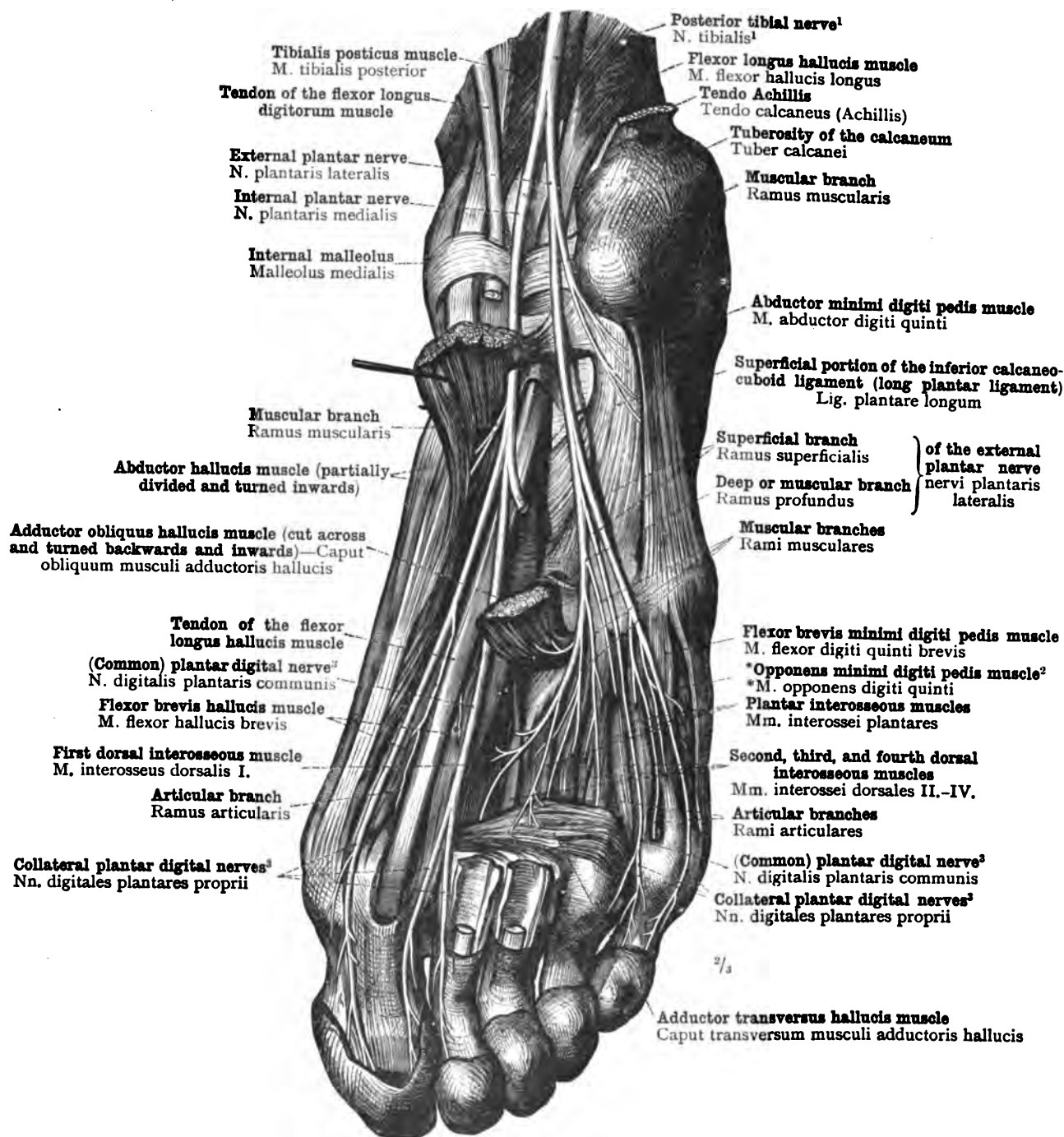


FIG. 1282.—THE DEEP NERVES OF THE SOLE OF THE FOOT, DISPLAYED BY THE PARTIAL REMOVAL OF THE PLANTAR FASCIA, APONEUROSIS PLANTARIS, AND OF THE FLEXOR BREVIS DIGITORUM PEDIS MUSCLE. THE PROXIMAL HALF OF THE ABDUCTOR HALLUCIS MUSCLE HAS BEEN DRAWN OUTWARDS, IN ORDER TO EXPOSE THE ENTRANCE OF THE EXTERNAL AND INTERNAL PLANTAR NERVES, NERVI PLANTARES, LATERALIS ET MEDIALIS, INTO THE SOLE OF THE FOOT.

¹ *Plantar Digital Nerves*.—As in the case of the *palmar* digital nerves, the author distinguishes between the *nervi digitales plantares communes*, common plantar digital nerves (before division), and the *nervi digitales plantares proprii*, collateral plantar digital nerves (after division). The distinction is often ignored in the English nomenclature.

² This branch (in common with which arises the *nerve to the flexor brevis hallucis muscle*) supplies the skin of the inner half of the plantar surface of the great toe. Strictly speaking it is one of the *collateral plantar digital branches* (see note ¹ above)—*N. digitalis plantaris proprius* in the author's nomenclature.

Nerves of the Sole of the Foot.



¹ See Appendix, note 442.

² See note 3 to p. 364, in Part III.

³ See note 1 to p. 846.

FIG. 1283.—THE DEEP OR MUSCULAR BRANCH OF THE EXTERNAL PLANTAR NERVE, RAMUS PROFUNDUS NERVI PLANTARIS LATERALIS, AND ITS DISTRIBUTION TO THE DEEP MUSCLES OF THE SOLE OF THE FOOT, DISPLAYED BY THE REMOVAL OF THE LONG AND THE SHORT FLEXORS OF THE TOES, AND BY DRAWING ASIDE THE ADDUCTOR OBLIQUUS HALLUCIS MUSCLE, CAPUT OBLIQUUM MUSCULI ADDUCTORIS HALLUCIS. THE PASSAGE OF THE EXTERNAL AND INTERNAL PLANTAR NERVES, NERVI PLANTARES, MEDIALIS ET LATERALIS, INTO THE SOLE OF THE FOOT HAS BEEN EXPOSED BY CUTTING THROUGH THE SUPERFICIAL LAYERS OF THE INTERNAL ANNULAR LIGAMENT OF THE ANKLE (LIGAMENTUM LACINIATUM) AND THE ADDUCTOR HALLUCIS MUSCLE.

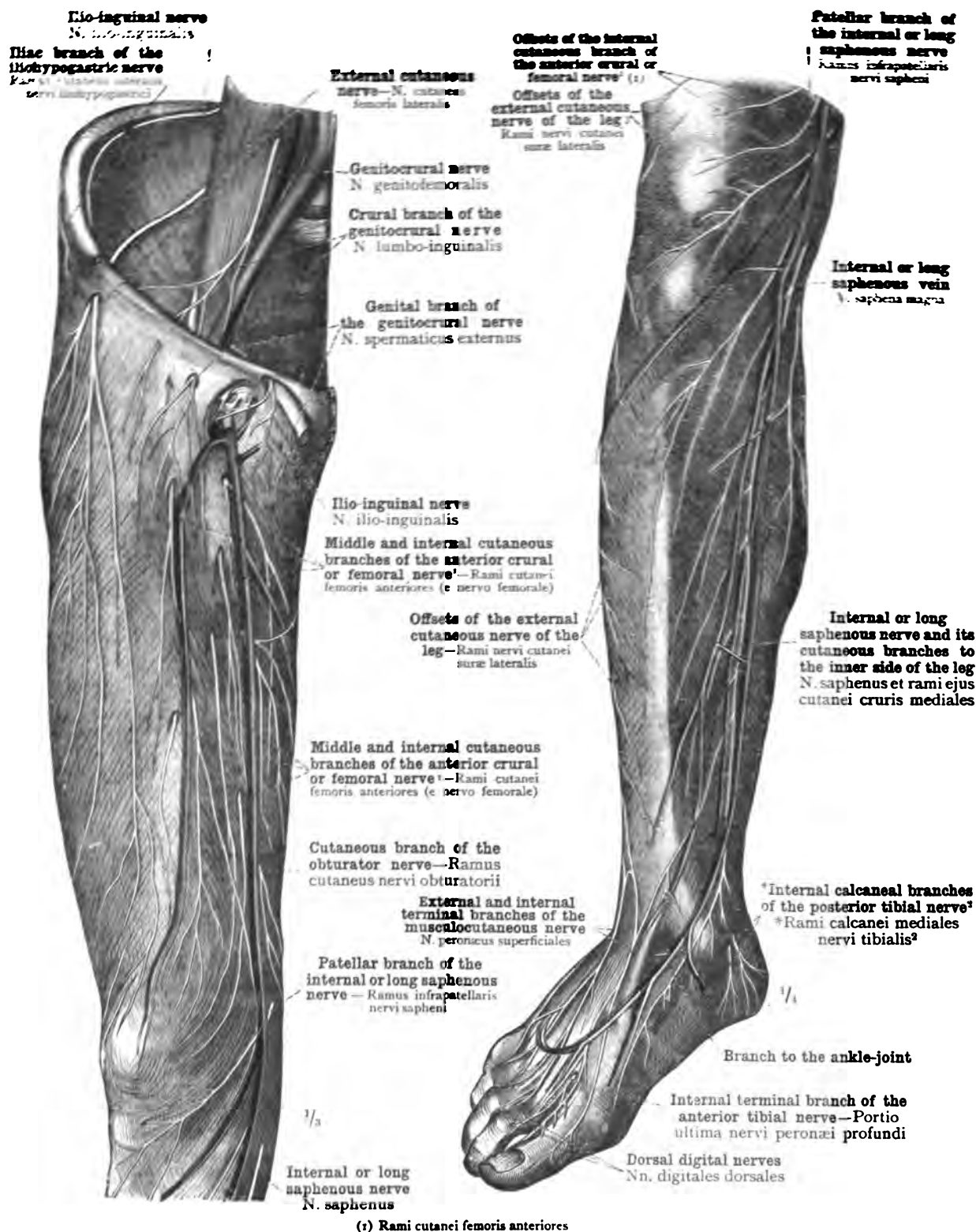


FIG. 1284. THE CUTANEOUS NERVES OF THE FRONT AND THE INNER SIDE OF THE THIGH.

FIG. 1285.—THE CUTANEOUS NERVES OF THE INNER SIDE AND THE FRONT OF THE LEG AND OF THE INNER SIDE AND THE DORSUM OF THE FOOT.

¹ See Appendix, note 439.² See Appendix, note 444.³ See note ⁴ to p. 840.

Cutaneous Nerves of the Lower Extremity.

Cutaneous offsets of the external branches of the posterior primary divisions of the sacral nerves
Nn. clunium medii

Cutaneous offsets of the external branches of the posterior primary divisions of the first, second, and third lumbar nerves
Nn. clunium superiores

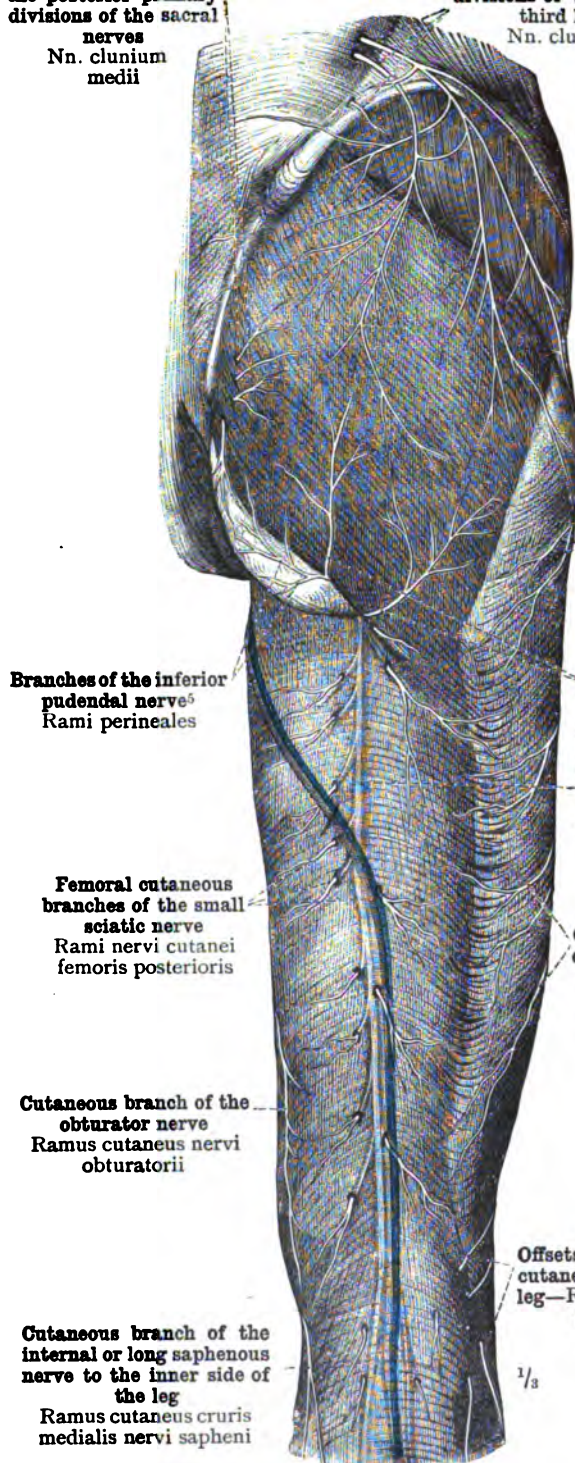


FIG. 1286.—THE CUTANEOUS NERVES OF THE GLUTEAL REGION AND THE BACK OF THE THIGH.

¹ Sometimes known in England by the name *communicans tibialis nerve*.
³ Sometimes known in England as the *communicans fibularis nerve*.

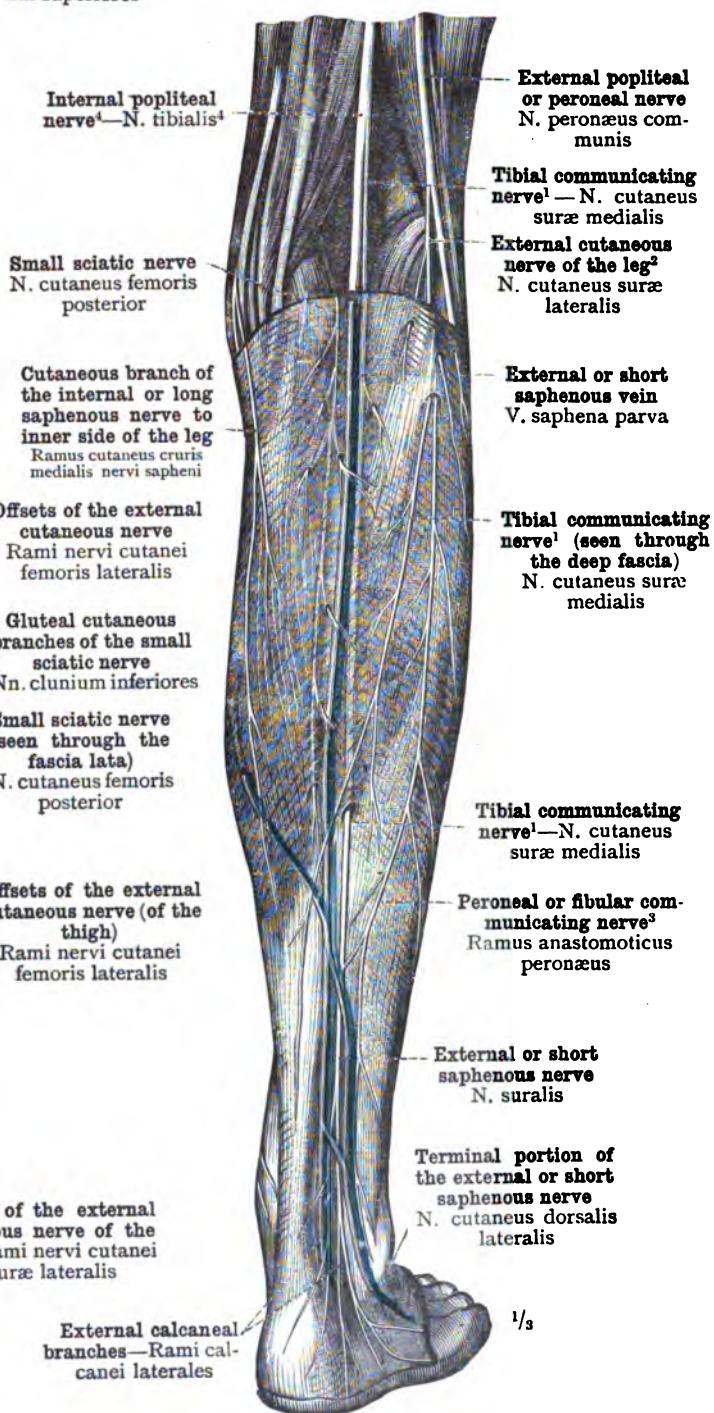


FIG. 1287.—THE CUTANEOUS NERVES OF THE BACK OF THE LEG.

² See note ⁴ to p. 840.
⁴ See Appendix, note 442.

⁵ See Appendix, note 443.

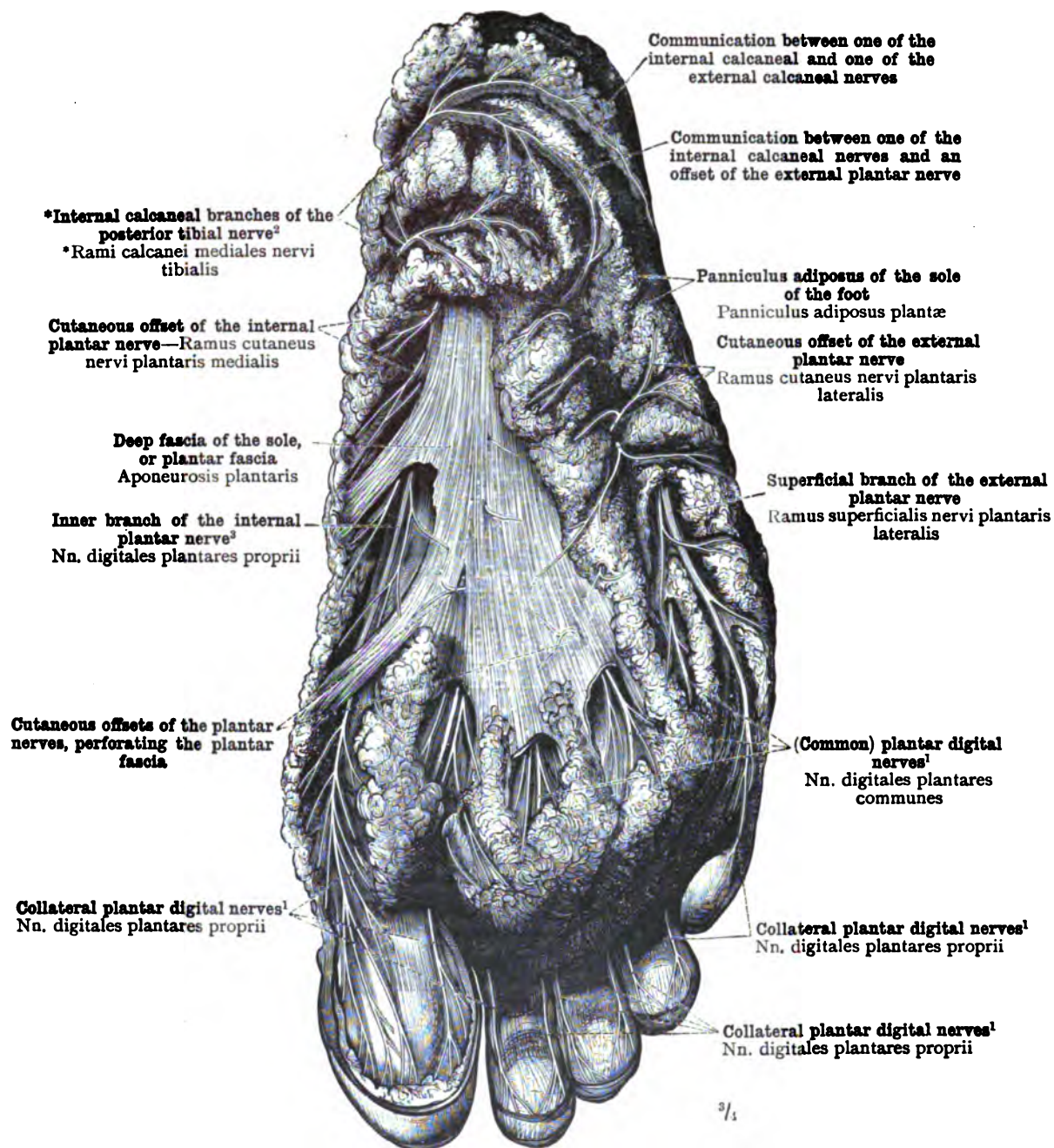


FIG. 1288.—THE CUTANEOUS NERVES OF THE SOLE OF THE FOOT, THE SKIN HAVING BEEN REMOVED, BUT THE SUPERFICIAL FASCIA (PANNICULUS ADIPOSUS) IN PART PRESERVED.

¹ See note ¹ to p. 846.

² See Appendix, note ⁴⁴⁴.

³ *Inner Branch of the Internal Plantar Nerve*.—In the original German edition of this work the author, in the letterpress to Fig. 1288, calls this "*Oberflächlicher Ast des N. plantaris medialis*," the *superficial branch of the internal plantar nerve*. In the German official nomenclature, however, this nerve is not, like the external plantar nerve, said to divide into a *ramus superficialis* and a *ramus profundus*. Quain calls the branch in question the *first digital branch of the internal plantar nerve*, "destined for the inner side of the great toe; it becomes subcutaneous further back than the others, and sends off a branch to the flexor brevis hallucis muscle." (Quain, *op. cit.*, vol. iii., part ii., p. 333). But in the description of Fig. 217, on the next page to that just quoted, Quain calls this nerve "*the inner branch of the internal plantar nerve*, giving branches to the flexor brevis hallucis muscle, and forming the internal collateral nerve of the great toe." The second of the two names used by Quain is that which I have adopted in the text.

Cutaneous Nerves of the Sole of the Foot.

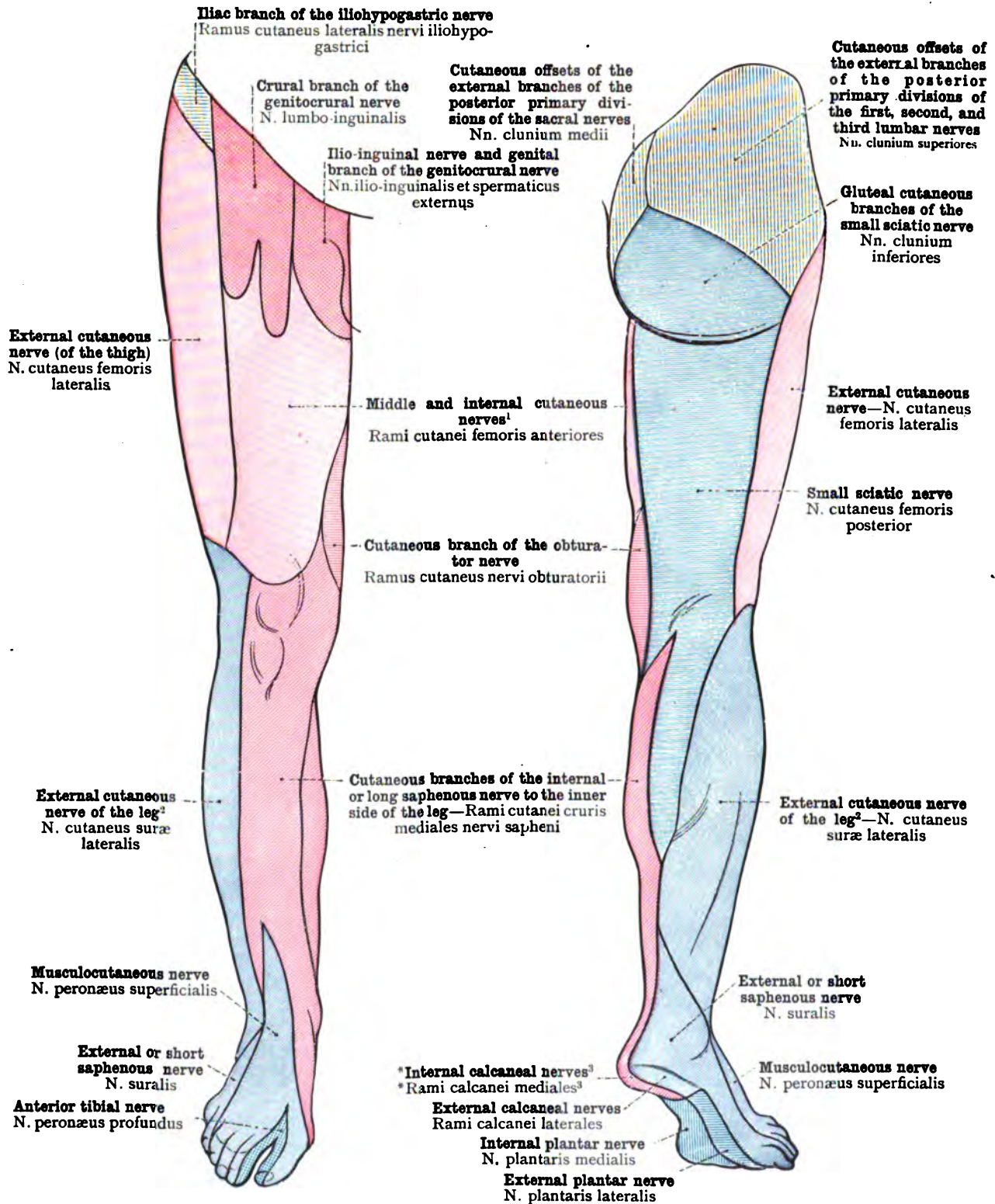
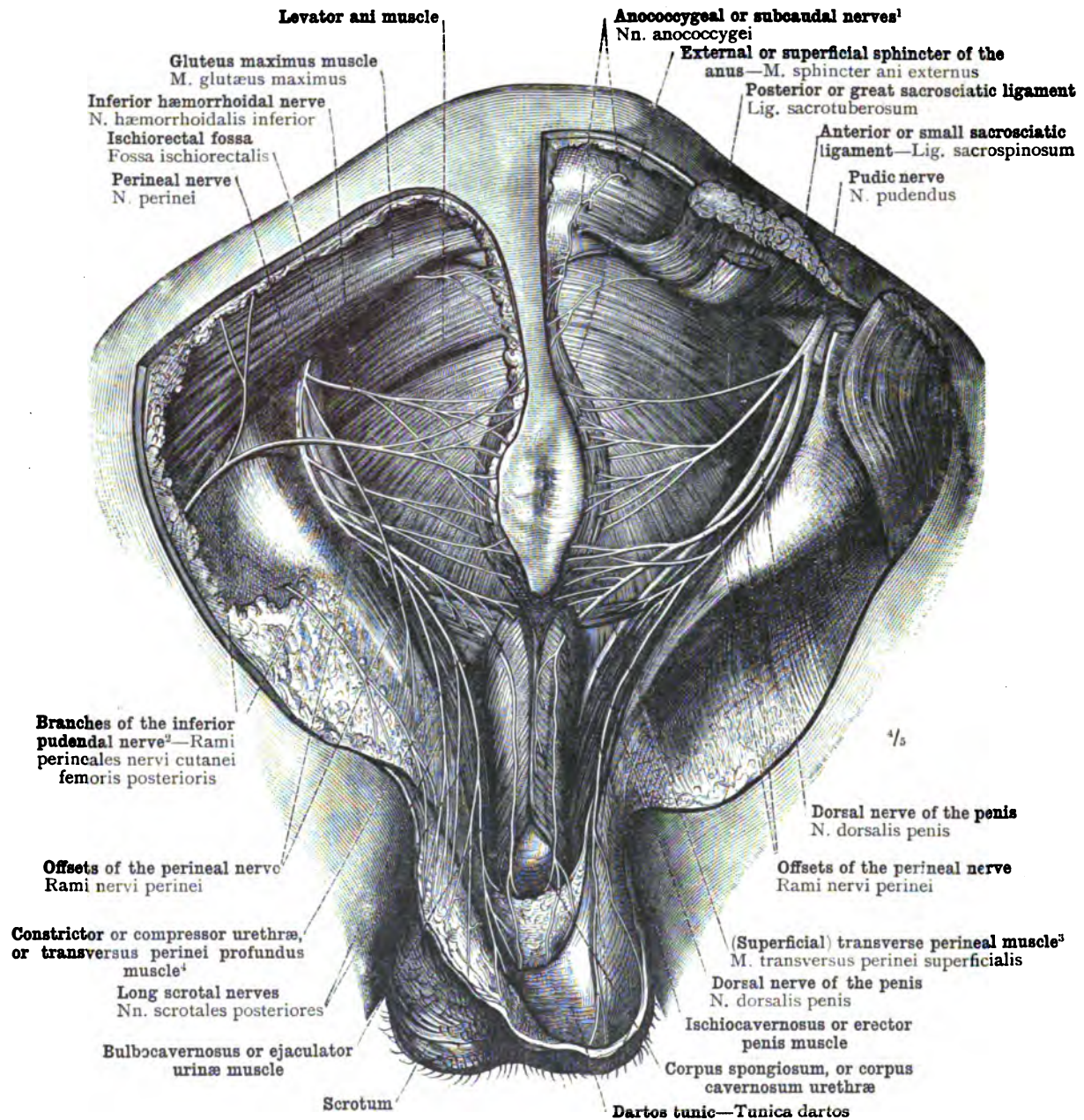


FIG. 1289.—THE CUTANEOUS AREAS OF THE NERVES OF THE LOWER EXTREMITY. ANTERIOR SURFACE.

FIG. 1290.—THE CUTANEOUS AREAS OF THE NERVES OF THE LOWER EXTREMITY. POSTERIOR SURFACE.

¹ See Appendix, note 439.² See note 4 to p. 840.³ Calcaneoplantar nerve, according to Quain. See Appendix, note 444.

Cutaneous Nerves of the Lower Extremity.



¹ See Appendix, note 436.

² See Appendix, note 433.

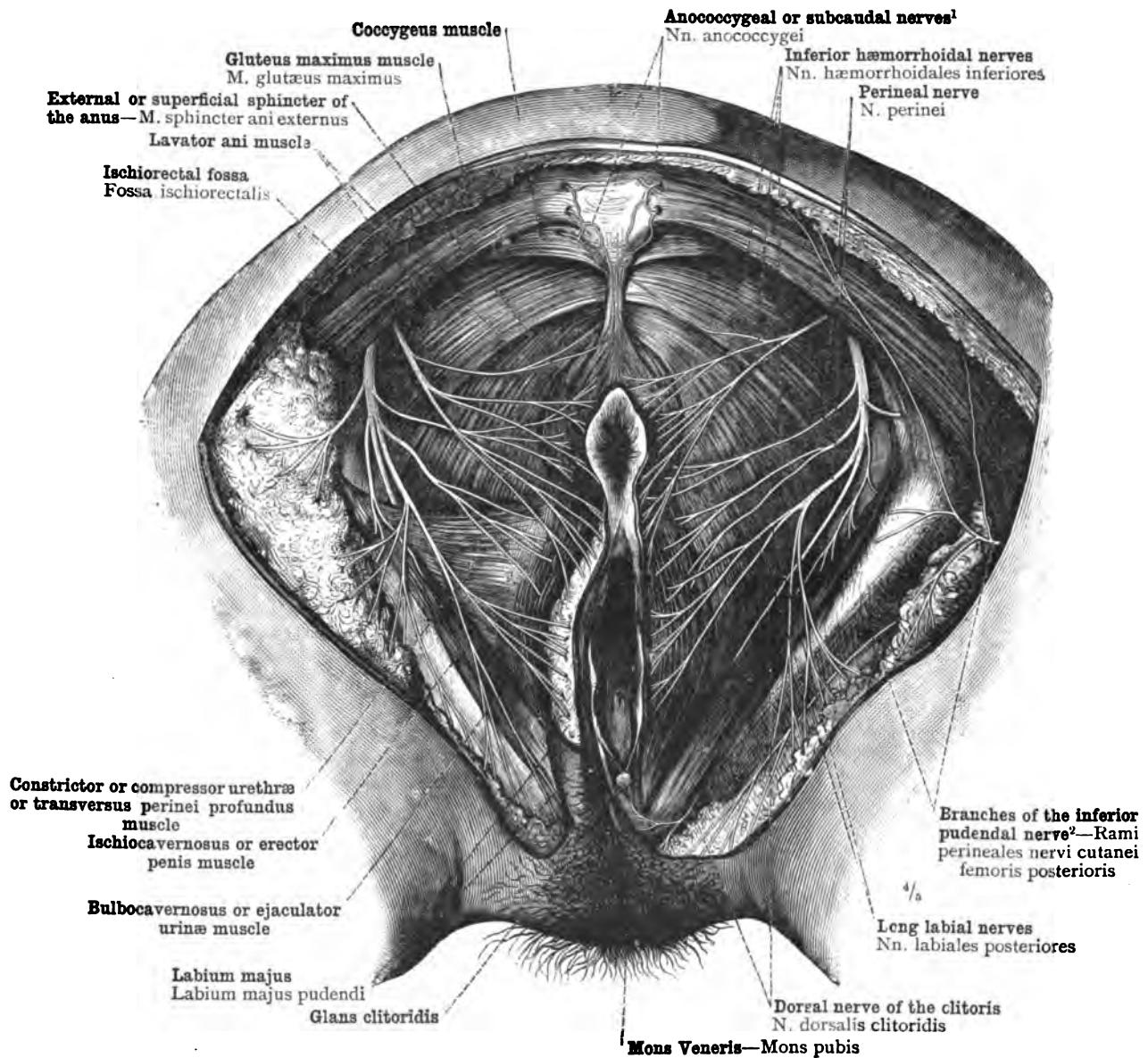
³ See note ¹ to p. 527, in Part IV.

⁴ See Appendix to Part IV., note 101.

FIG. 1291.—THE DISTRIBUTION OF THE PUDIC NERVE, N. PUDENDUS, IN THE PERINEAL REGION OF THE MALE AND ON THE BACK OF THE SCROTUM. THE COURSE OF THE DORSAL NERVE OF THE PENIS, N. DORSALIS PENIS, IN THE OUTER WALL OF THE ISCHIORECTAL FOSSA, FOSSA ISCHIORECTALIS. THE ANOCOCCYGEAL OR SUBCAUDAL NERVES, NN. ANOCOCCYGEI (see Appendix, note 438). ON THE LEFT SIDE OF THE BODY THE BRANCHES OF THE INFERIOR PUDENDAL NERVE, RAMI PERINEALES NERVI CUTANEI FEMORIS POSTERIORIS (see Appendix, note 443), HAVE BEEN DISSECTED OUT. ONE OF THESE BRANCHES IS UNUSUALLY LARGE IN THIS SPECIMEN, AND SUPPLIES THE SKIN OF THE ANAL REGION (VAR.).

On the right side of the body the hinder portion of the gluteus maximus muscle and the posterior or great sacrosciatic ligament (ligamentum sacrotuberosum) have been divided, in order to display the entrance of the pudic nerve (n. pudendus) into the ischioirectal fossa. On the same side the urogenital diaphragm (see Appendix to Part IV., note 99) has been removed, but the (superficial) transverse perineal muscle (see note ¹ to p. 527, in Part IV.) has been left intact. The trunk of the internal pudic nerve (n. pudendus) and the primary branches of that nerve, in so far as they run within the substance of the obturator fascia, have been dissected out of that fascia.

Nerves of the Male Perineal Region.



¹ See Appendix, note 438.

² See Appendix, note 443.

FIG. 1292.—THE DISTRIBUTION OF THE PUDIC NERVE, N. PUDENDUS, IN THE FEMALE PERINEAL AND PUBIC REGIONS. THE TRUNK OF THE PUDIC NERVE, N. PUDENDUS, IS COVERED BY THE GLUTEUS MAXIMUS MUSCLE. ON THE RIGHT SIDE OF THE BODY THE BRANCHES OF THE INFERIOR PUDENDAL NERVE, RAMI PERINEALES, NERVI CUTANEI FEMORIS POSTERIORIS (see Appendix, note 443), HAVE BEEN DISSECTED OUT; BUT THE BRANCHES OF THIS NERVE TO THE LABIUM MAJUS HAVE BEEN CUT SHORT. THE FORMATION OF THE ANOCOCYGEAL OR SUBCAUDAL NERVES, NN. ANOCOCYGEI (see Appendix, note 438), OUT OF THE POSTERIOR PRIMARY DIVISION OF THE COCCYGEAL NERVE AND OUT OF PERFORATING BRANCHES WHICH ARISE FROM THE ANTERIOR PRIMARY DIVISIONS OF THE FOURTH AND FIFTH SACRAL NERVES AND THE COCCYGEAL NERVE. IN THIS CONNEXION SEE ALSO FIG. 1295.

On the right side of the body the urogenital diaphragm (see Appendix to Part IV., note 99) and the labium majus have been entirely removed, whereas on the left side the skin has only been in part dissected off the labium majus and the constrictor or compressor urethræ or transversus perinei profundus (see Appendix to Part IV., note 101) muscle has been left intact.

Nerves of the Female Perineal Region.

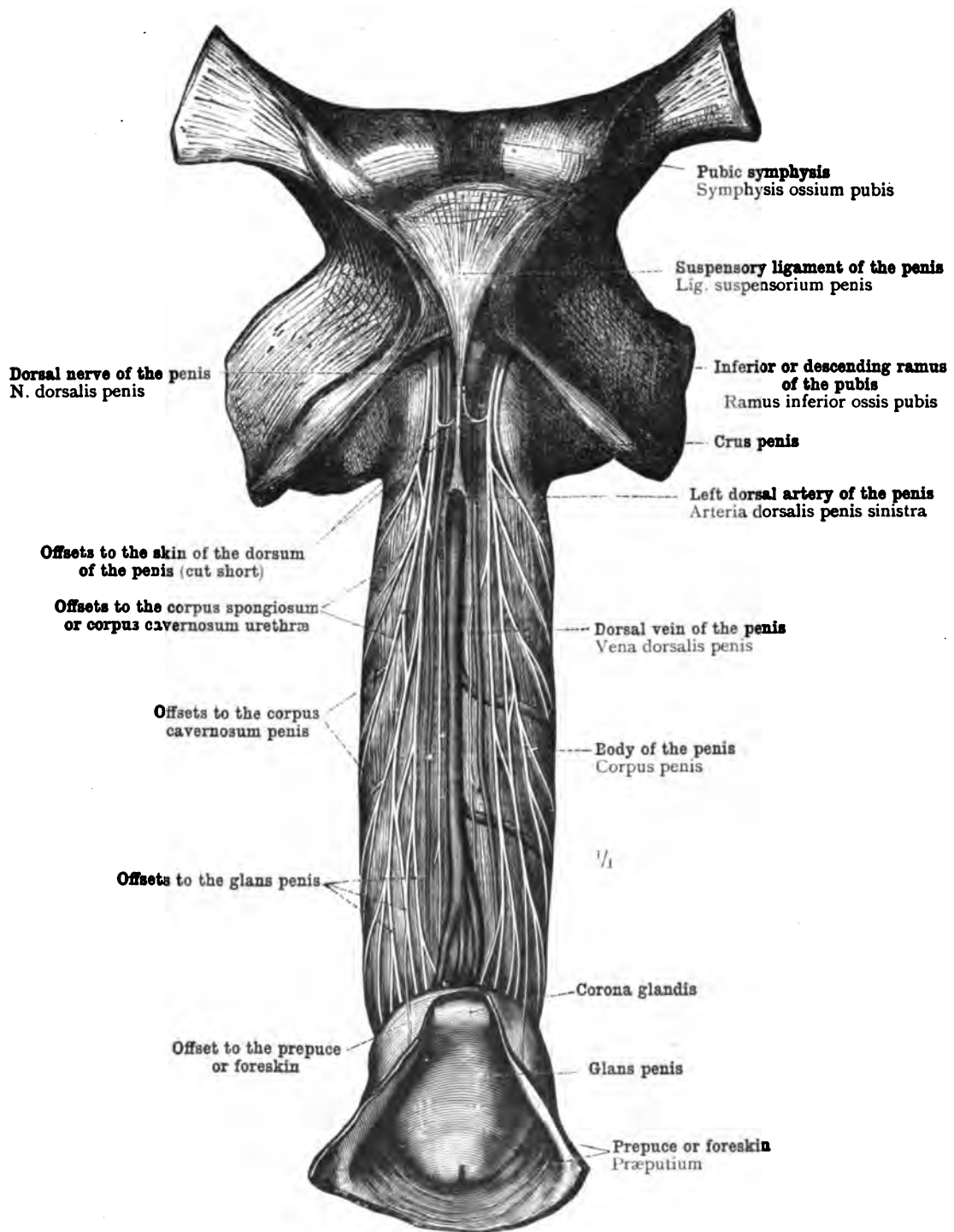


FIG. 1293.—THE DISTRIBUTION OF THE DORSAL NERVE OF THE PENIS, N. DORSALIS PENIS, ON THE DORSUM OF THE PENIS, AND THE RELATION OF THE DORSAL ARTERY AND VEIN OF THE PENIS TO THE OFFSETS OF THE DORSAL NERVE OF THE PENIS.

The skin of the penis has been removed, with the exception of the prepuce or foreskin (præputium); an incision has been made through the dorsal portion of the latter, in the median line.

Nerves of the Penis.

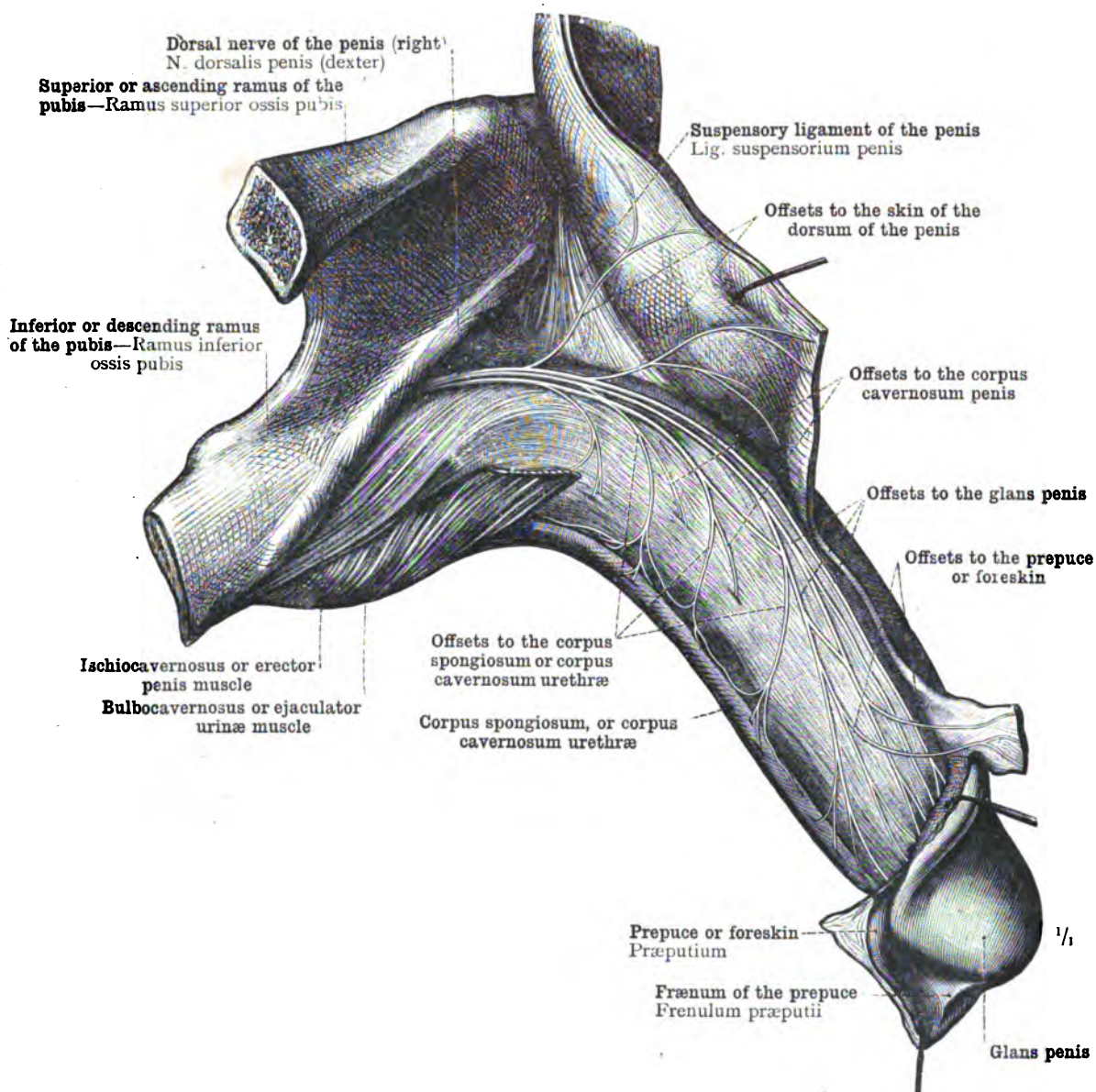
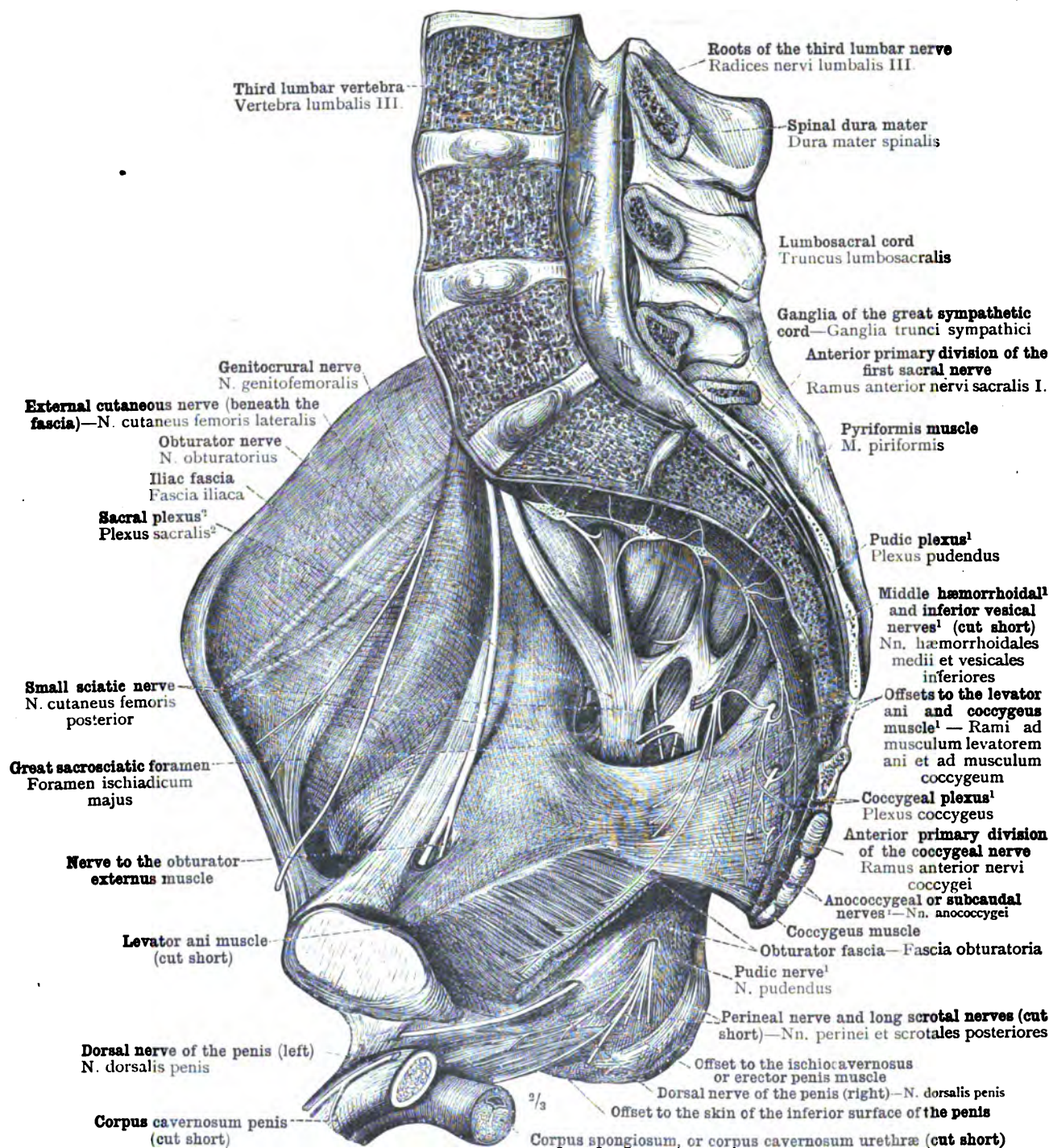


FIG. 1294.—THE DISTRIBUTION OF THE DORSAL NERVE OF THE PENIS IN THE SUBSTANCE OF THE PENIS AND THE SKIN OF THAT ORGAN. SEEN FROM THE RIGHT SIDE.

The preserved portion of the skin of the right side of the penis and the mons pubis has been drawn forwards. The anterior portion of the bulbocavernosus or erector penis muscle has been cut away, in order to expose to view the branch of the dorsal nerve of the penis that enters that muscle.



¹ See Appendix, note 431.
² The nervous plexus denoted here by the term *plexus sacralis* is by some English authors called the *sciatic plexus*, the *sacral plexus* of these authors comprising both the *plexus sacralis* and the *plexus pudendus* of Toldt. See Appendix, note 435.

FIG. 1295.—THE SACRAL PLEXUS, PLEXUS SACRALIS (see note ² above), THE PUDIC PLEXUS, PLEXUS PUDENDUS (see Appendix, note ⁴³⁸), AND THE COCCYGEAL PLEXUS, PLEXUS COCCYGEUS (see Appendix, note ⁴³⁸), AS SEEN IN THE RIGHT HALF OF A MALE PELVIS DIVIDED BY A MEDIAN SAGITTAL SECTION. THE NERVES TO THE LEVATOR ANI AND COCCYGEUS MUSCLES, DERIVED FROM THE THIRD AND FOURTH SACRAL NERVES (see Appendix, note ⁴³⁸). THE OFFSETS FROM THE ANTERIOR PRIMARY DIVISIONS OF THE COCCYGEAL NERVE AND THE FOURTH AND FIFTH SACRAL NERVES WHICH, AFTER RECEIVING A COMMUNICATING BRANCH FROM THE SYMPATHETIC NERVOUS SYSTEM, PERFORATE THE COCCYGEUS MUSCLE AND ASSIST IN FORMING THE ANOCOCYGEAL OR SUBCAUDAL NERVES, NN. ANOCOCYGEI. (IN THIS CONNEXION SEE ALSO FIG. 1292.) THE PASSAGE OF BRANCHES OF THE PUDIC NERVE, N. PUDENDUS, THROUGH THE OBTURATOR FASCIA INTO THE ISCHIORECTAL FOSSA.

The Sacral Plexus, Plexus Sacralis; the Pudic Plexus, Plexus Pudendus; and the Coccygeal Plexus, Plexus Coccygeus (see Appendix, note ⁴³⁸, and note ² above).

SYSTEMA NERVORUM
PERIPHERICUM

THE
PERIPHERAL NERVOUS SYSTEM

NERVI CEREBRALES

CRANIAL NERVES

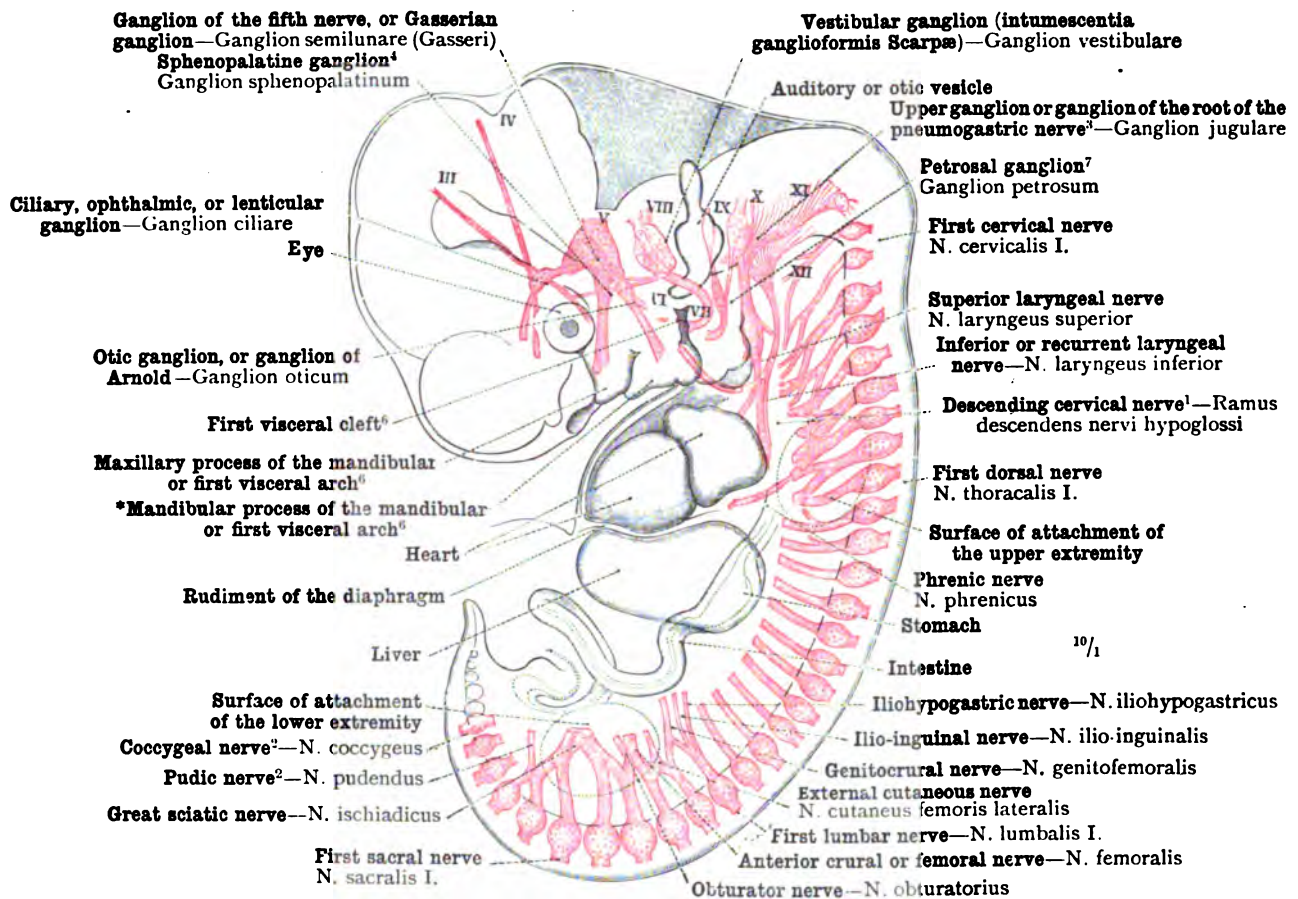


FIG. 1296.—RUDIMENT OF THE CEREBROSPINAL NERVOUS SYSTEM IN A HUMAN EMBRYO HAVING A BODY-LENGTH OF $\frac{2}{3}$ INCH (10.2 MILLIMETRES). ABOUT THE THIRTY-SECOND DAY OF INTRA-UTERINE LIFE. AFTER W. HIS.

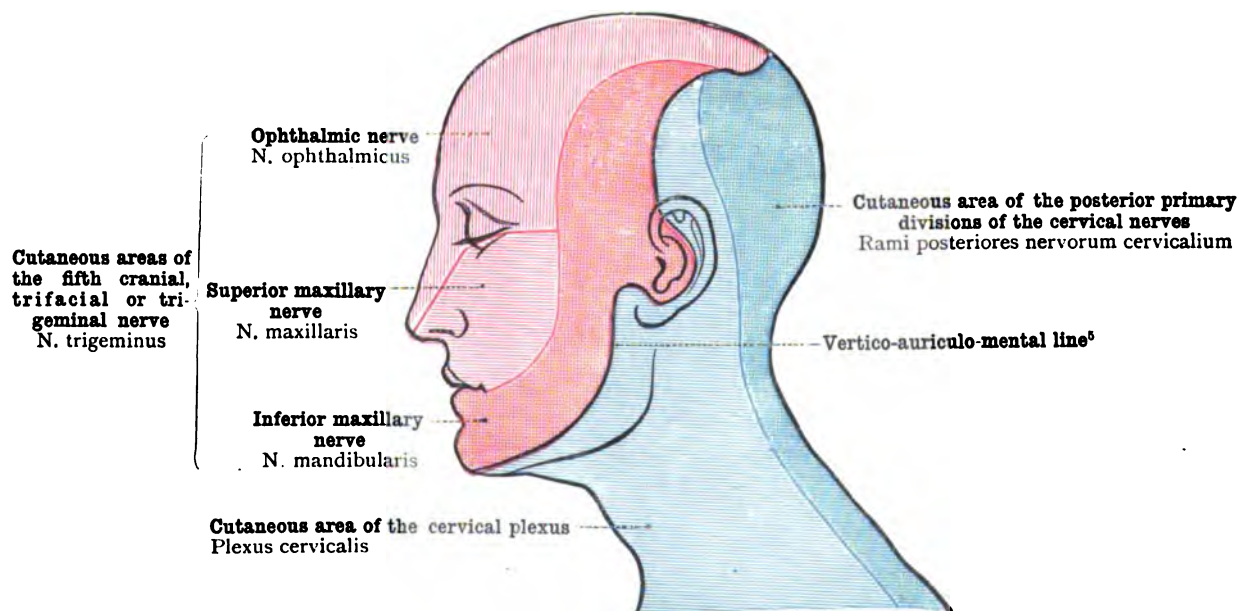


FIG. 1297.—THE CUTANEOUS AREAS OF THE FIFTH CRANIAL, TRIFACIAL, OR TRIGEMINAL NERVE, N. TRIGEMINUS, AND ITS THREE DIVISIONS.

¹ Often called the *descendens noni nerve*. See Appendix, note 430.
 ⁴ Known also as *Meckel's ganglion* and as the *nasal ganglion*.
 ⁷ Also known as *Andersch's ganglion*.

² See Appendix, note 438.
 ⁵ See note ¹ to p. 811.

³ See Appendix, note 447.
 ⁶ See Appendix, note 448.

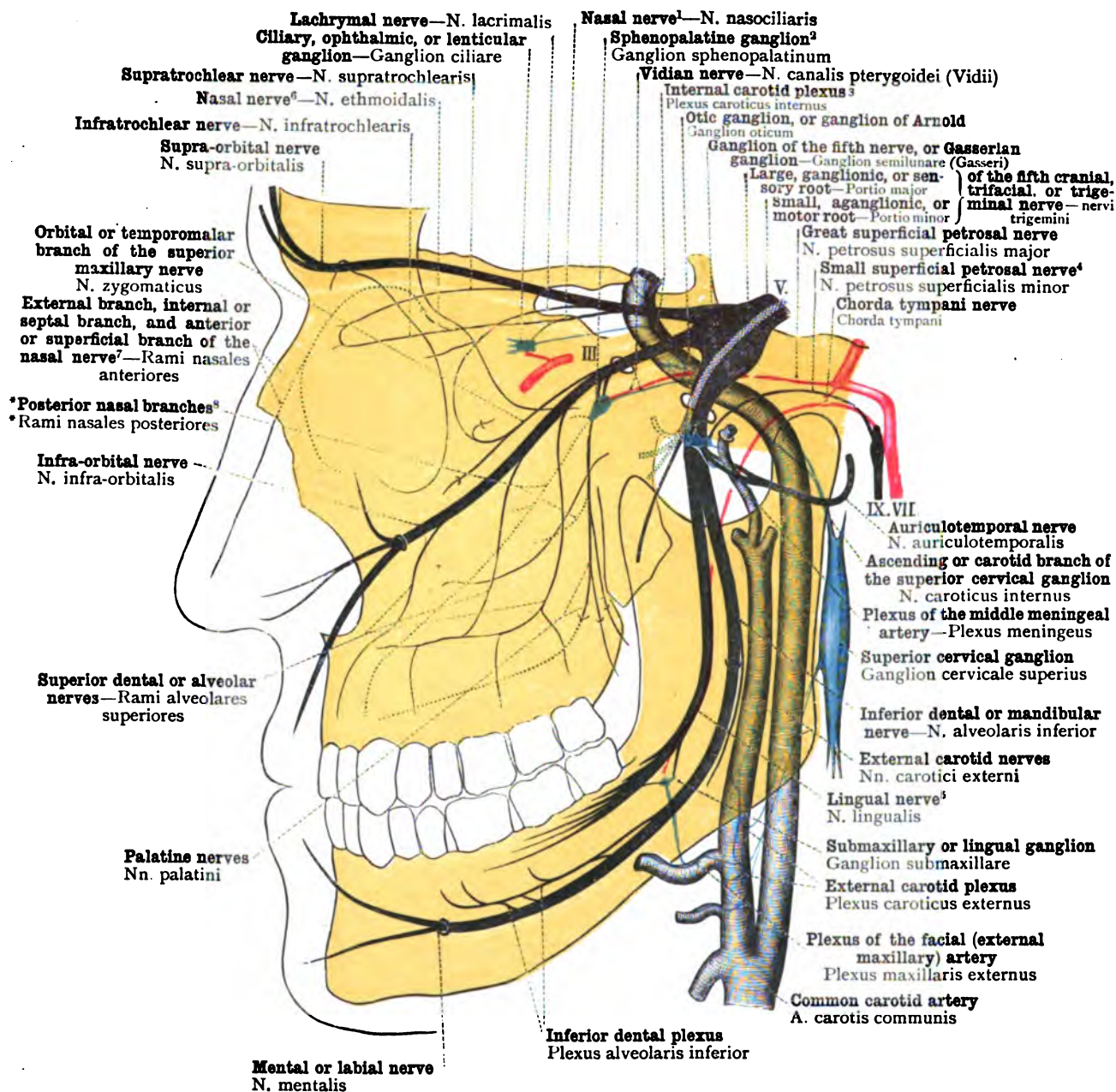


FIG. 1298.—THE FIFTH CRANIAL, TRIGEMINAL, OR TRIFACIAL NERVE, N. TRIGEMINUS; DIAGRAMMATIC REPRESENTATION OF ITS DISTRIBUTION AND OF ITS PRINCIPAL COMMUNICATIONS.

The nerves tinted red are the third cranial or common oculomotor nerve, nervus oculomotorius (III.), and the seventh cranial or facial nerve, nervus facialis (VII.); the Roman numeral V. indicates the roots of the trigeminal nerve, the numeral IX. indicates the glossopharyngeal nerve. The ganglia connected with the trigeminal nerve are tinted blue; blue also are those parts of the sympathetic nervous system that appear in the figure.

¹ Known also as the *oculonasal* and as the *nasociliary* nerve.

² Known also as *Meckel's ganglion* and as the *nasal ganglion*.

³ *Carotid Plexus*.—In England the plexus of nerves surrounding the internal carotid artery is often spoken of as the *carotid plexus* without qualification.

⁴ By Arnold called the *long root of the otic ganglion*.

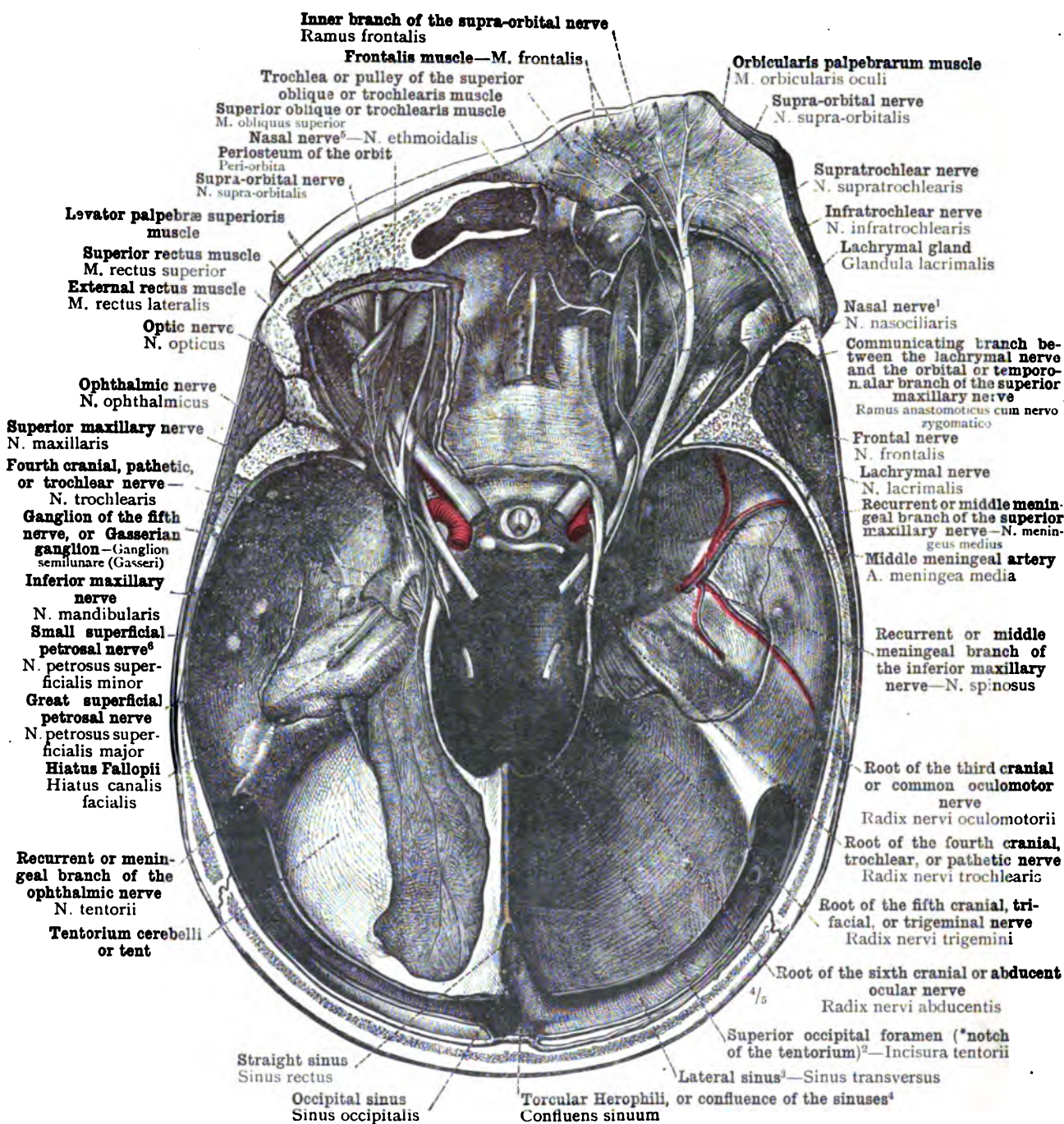
⁵ Formerly known also as the *gustatory* nerve.

⁶ See Appendix, note 449.

⁷ The terminal branches of the *nervus ethmoidalis anterior* of the German nomenclature. See Appendix, note 449.

⁸ See Appendix, note 450.

Trigeminus Group.



¹ Known also as the *oculonasal* and as the *nasociliary* nerve.

² See Appendix, note 412.

³ See Appendix, note 410.

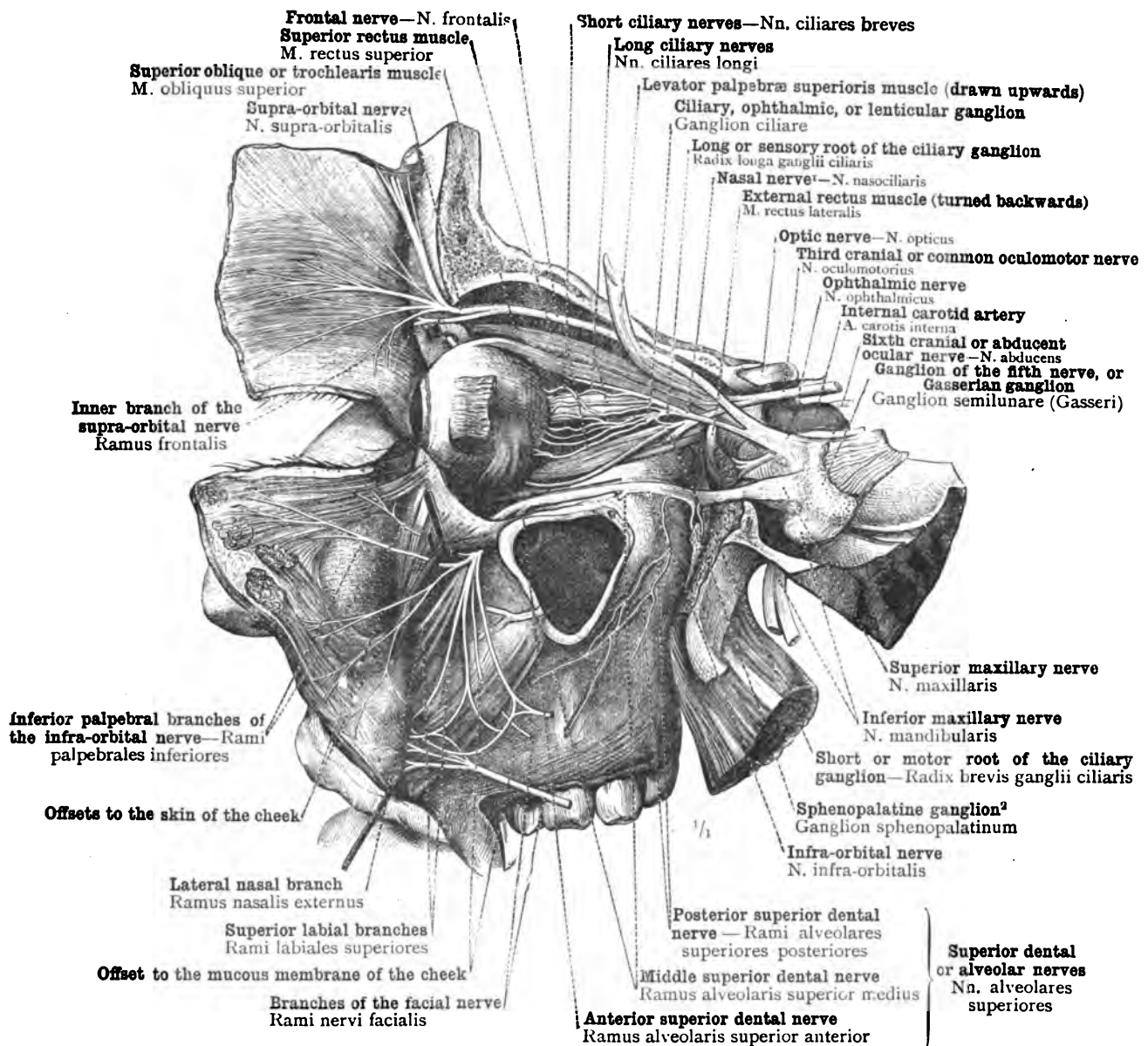
⁴ In this specimen the somewhat exceptional condition of a true *confluence* is exhibited. See Appendix to Part V., note 266.

⁵ See Appendix, note 442.

⁶ By Arnold called the *long root of the otic ganglion*.

FIG. 1293.—THE OPHTHALMIC NERVE, N. OPHTHALMICUS, OR FIRST DIVISION OF THE FIFTH CRANIAL, TRIFACIAL, OR TRIGEMINAL NERVE, N. TRIGEMINUS, AND ALSO THE UPPER BRANCH OF THE THIRD CRANIAL OR COMMON OCULOMOTOR NERVE, RAMUS SUPERIOR NERVI OCULOMOTORII, AND THE FOURTH CRANIAL, PATHETIC, OR TROCHLEAR NERVE, N. TROCHLEARIS, DISPLAYED BY THE REMOVAL OF THE UPPER WALL OF THE ORBIT. THE NERVES OF THE DURA MATER: THE RECURRENT OR MENINGEAL BRANCH OF THE OPHTHALMIC NERVE, N. TENTORII (WITH REGARD TO THE ORIGIN OF THIS NERVE, FIG. 1304 SHOULD BE EXAMINED); THE RECURRENT OR MIDDLE MENINGEAL BRANCH OF THE SUPERIOR MAXILLARY NERVE, N. MENINGEUS MEDIUS; AND THE RECURRENT OR MIDDLE MENINGEAL BRANCH OF THE INFERIOR MAXILLARY NERVE, N. SPINOSUS.

On the left side of the body the upper margin of the orbit has been left intact, but the levator palpebræ superioris and superior rectus muscles have on this side been detached from their origins and turned outwards, in order to show the branches of the third cranial or common oculomotor nerve that enter these muscles.



¹ Known also as the *nasociliary* and as the *oculonasal* nerves. ² Known also as *Meckel's ganglion* and as the *nasal ganglion*.
³ The *quadratus labii superioris* muscle of Continental anatomists comprises three muscles in the English nomenclature, viz., the levator labii superioris alaeque nasi, levator labii superioris proprius, and zygomaticus minor. See Fig. 545, p. 300, in Part III.

FIG. 1300.—THE SUPERIOR MAXILLARY NERVE, N. MAXILLARIS, OR SECOND DIVISION OF THE FIFTH CRANIAL, TRIFACIAL, OR TRIGEMINAL NERVE, N. TRIGEMINUS, AND ITS CONNEXION WITH THE SPHENOPALATINE GANGLION (MECKEL'S GANGLION, OR THE NASAL GANGLION), GANGLION SPHENOPALATINUM, BY MEANS OF THE TWO SPHENOPALATINE NERVES, NN. SPHENOPALATINI. THE SUPERIOR DENTAL OR ALVEOLAR NERVES, NN. ALVEOLARES SUPERIORES. THE FACIAL RADIATION OF THE TERMINAL BRANCHES OF THE INFRA-ORBITAL NERVE, WHICH, BY THEIR UNION WITH THE INFRA-ORBITAL BRANCHES OF THE FACIAL NERVE, FORM THE INFRA-ORBITAL PLEXUS. IN CONNEXION WITH THE OPHTHALMIC NERVE, OR FIRST DIVISION OF THE FIFTH CRANIAL NERVE, THE FRONTAL NERVE, N. FRONTALIS, AND THE CILIARY, OPHTHALMIC, OR LENTICULAR GANGLION, GANGLION CILIARE, WITH THE CILIARY NERVES, NN. CILIARES, THAT ENTER THE EYEBALL, ARE DISPLAYED. LEFT SIDE OF FACE, SEEN FROM THE LEFT SIDE.

The skin of the forehead and the cheek and the superficial facial muscles have been dissected up and turned forwards. This having been done, the lower jaw was removed, and the outer wall of the orbit and the outer wall of the skull were cut away until the sphenomaxillary fossa, fossa pterygopalatina, was reached. The levator palpebrae superioris and external rectus muscles have been cut across and their proximal segments turned backwards. The quadratus labii superioris muscle (see note ³ above), which covers the infra-orbital plexus, has been drawn forwards with a hook.

Trigeminus Group.

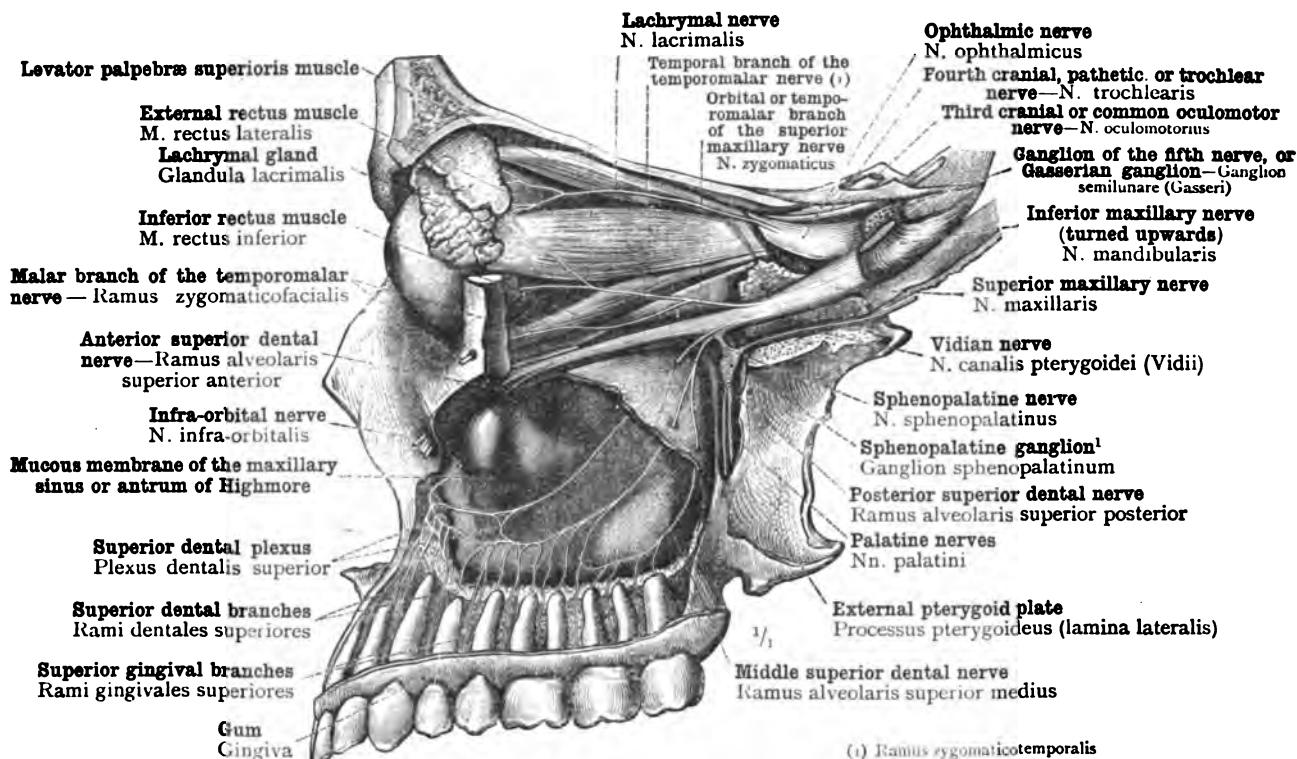


FIG. 1301.—THE SUPERIOR DENTAL OR ALVEOLAR NERVES, NN. ALVEOLARES SUPERIORES, WITH THE SUPERIOR DENTAL PLEXUS, PLEXUS DENTALIS SUPERIOR, AND THE SUPERIOR DENTAL AND SUPERIOR GINGIVAL BRANCHES, RAMI DENTALES SUPERIORES ET RAMI GINGIVALES SUPERIORES, DISPLAYED BY THE REMOVAL OF THE OUTER LAMELLA OF THE SUPERIOR MAXILLARY BONE. THE ORBITAL OR TEMPOROMALAR BRANCH OF THE SUPERIOR MAXILLARY NERVE, N. ZYGOMATICUS, AND ITS COMMUNICATION WITH THE LACHRYMAL NERVE, N. LACHRYMALIS. LEFT SIDE OF THE FACE, SEEN FROM THE LEFT SIDE.

In the maxillary sinus or antrum of Highmore the outer surface of the mucous membrane is exposed.

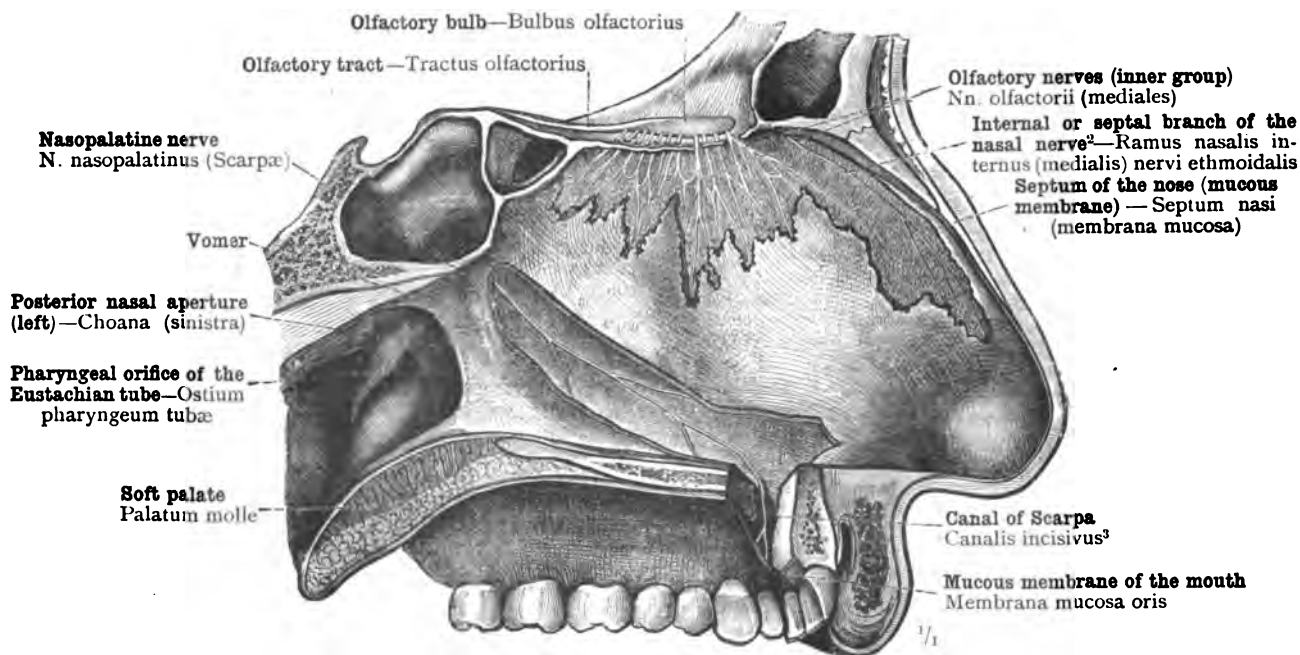


FIG. 1302.—THE OLFACTORY NERVES, NN. OLFACTORII, THE INTERNAL OR SEPTAL BRANCH OF THE NASAL NERVE RAMUS NASALIS INTERNUS (MEDIALIS) NERVI ETHMOIDALIS, AND THE NASOPALATINE NERVE, N. NASO PALATINUS, A BRANCH OF THE SPHENOPALATINE GANGLION (MECKEL'S GANGLION OR THE NASAL GANGLION), GANGLION SPHENOPALATINUM.

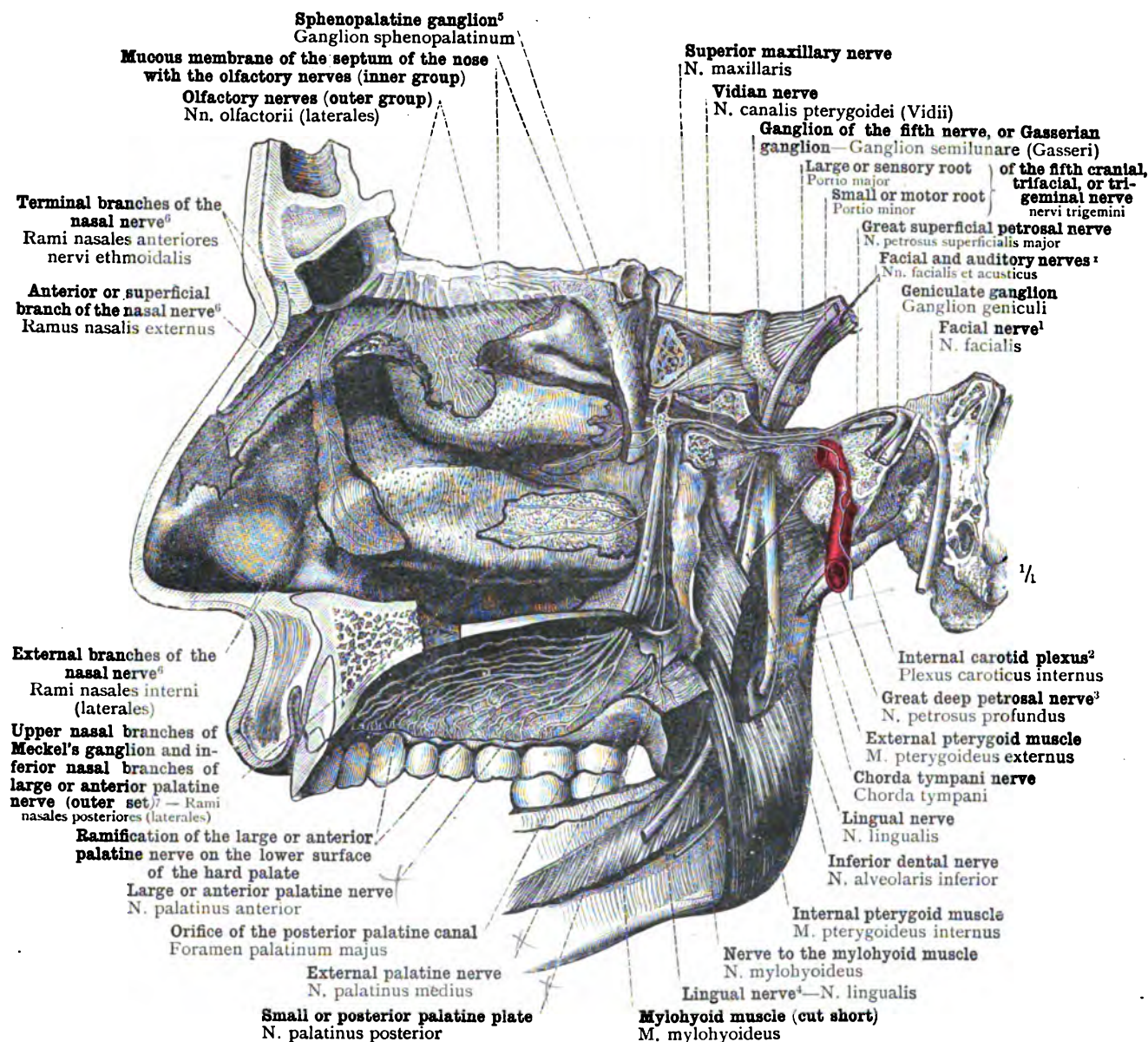
These nerves have been laid bare on the right side of the nasal septum by the partial removal of the mucous membrane.

¹ Known also as *Meckel's ganglion* and as the *nasal ganglion*.

² See Appendix, note 449.

³ See Appendix, note 451.

Trigeminal Group.—Nn. olfactorii—The olfactory nerves.



¹ In Soemmerring's enumeration the *facial* is the seventh, the auditory the eighth cranial nerve; in that of Willis, the former is the *portio dura*, the latter the *portio mollis*, of the seventh cranial nerve.

² See note 3 to p. 859.

³ See Appendix, note 452.

⁴ Formerly known also as the *gustatory nerve*.

⁵ Known also as *Meckel's ganglion*, and as the *nasal ganglion*.

⁶ See Appendix, note 442.

⁷ See Appendix, note 450.

FIG. 1303.—THE SPHENOPALATINE GANGLION (MECKEL'S GANGLION, OR THE NASAL GANGLION), GANGLION SPHENOPALATINUM. THE ROOTS OF THIS GANGLION: THE SPHENOPALATINE NERVES, NN. SPHENOPALATINI FORMING THE SENSORY ROOT; THE WHITE PORTION OF THE VIDIAN NERVE, N. CANALIS PTERYGOIDEI (VIDII), VIZ., THE GREAT SUPERFICIAL PETROSAL NERVE, N. PETROSUS SUPERFICIALIS MAJOR, FORMING THE MOTOR ROOT; AND THE GREY PORTION OF THE VIDIAN NERVE, VIZ., THE GREAT DEEP PETROSAL NERVE, N. PETROSUS PROFUNDUS, FORMING THE SYMPATHETIC ROOT. THE NASOPALATINE RADIATION OF THE SUPERIOR MAXILLARY NERVE, N. MAXILLARIS, IN THE FORM OF BRANCHES OF MECKEL'S GANGLION. THE UPPER AND LOWER (POSTERIOR) NASAL BRANCHES, RAMI NESALES POSTERIORES (see Appendix, note 450), AND THE PALATINE NERVES, NN. PALATINI. THE ANTERIOR OR SUPERFICIAL BRANCH, THE EXTERNAL BRANCH, AND THE INTERNAL OR SEPTAL BRANCH OF THE NASAL NERVE, RAMI NESALES ANTERIORES (LATERALES) NERVI ETHMOIDALIS. THE EMERGENCE FROM THE FORAMEN OVALE OF THE INFERIOR MAXILLARY NERVE, N. MANDIBULARIS, OR THIRD DIVISION OF THE FIFTH CRANIAL, TRIFACIAL, OR TRIGEMINAL NERVE, AND THE UNION OF THE LINGUAL NERVE WITH THE CHORDA TYMPANI NERVE. THE RAMIFICATION OF THE OLFACTORY NERVES (OUTER GROUP), NN. OLFACTORII (LATERALES), ON THE SUPERIOR AND MIDDLE TURBinate BONES OF THE NOSE.

In the right half of a sagittally hemisected head, the tongue, the greater part of the soft palate, and the pharynx were removed; the middle portion of the base of the skull was then cut away until the carotid canal was reached, and this canal as well as the Vidian canal, the internal auditory meatus, and the aqueduct of Fallopius, were opened. The ganglion of the fifth nerve or Gasserian ganglion, ganglion semilunare, was turned outwards, in order to display the small or motor root of the trigeminal nerve, portio minor nervi trigemini, which runs along the under surface of the ganglion. Of the mucous membrane of the septum of the nose a narrow strip has been preserved, on the upper part of which the olfactory nerves of the inner group are visible.

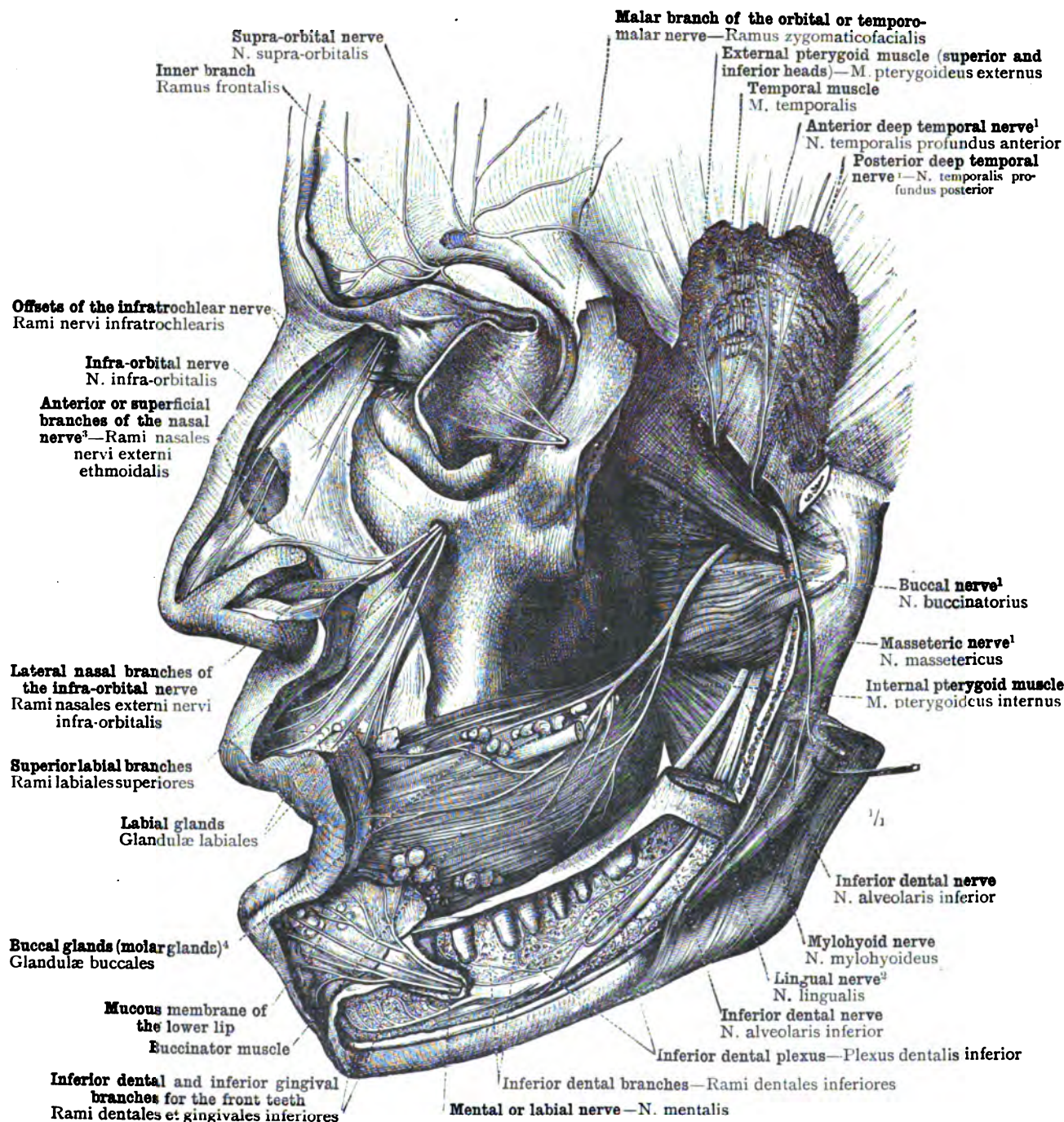
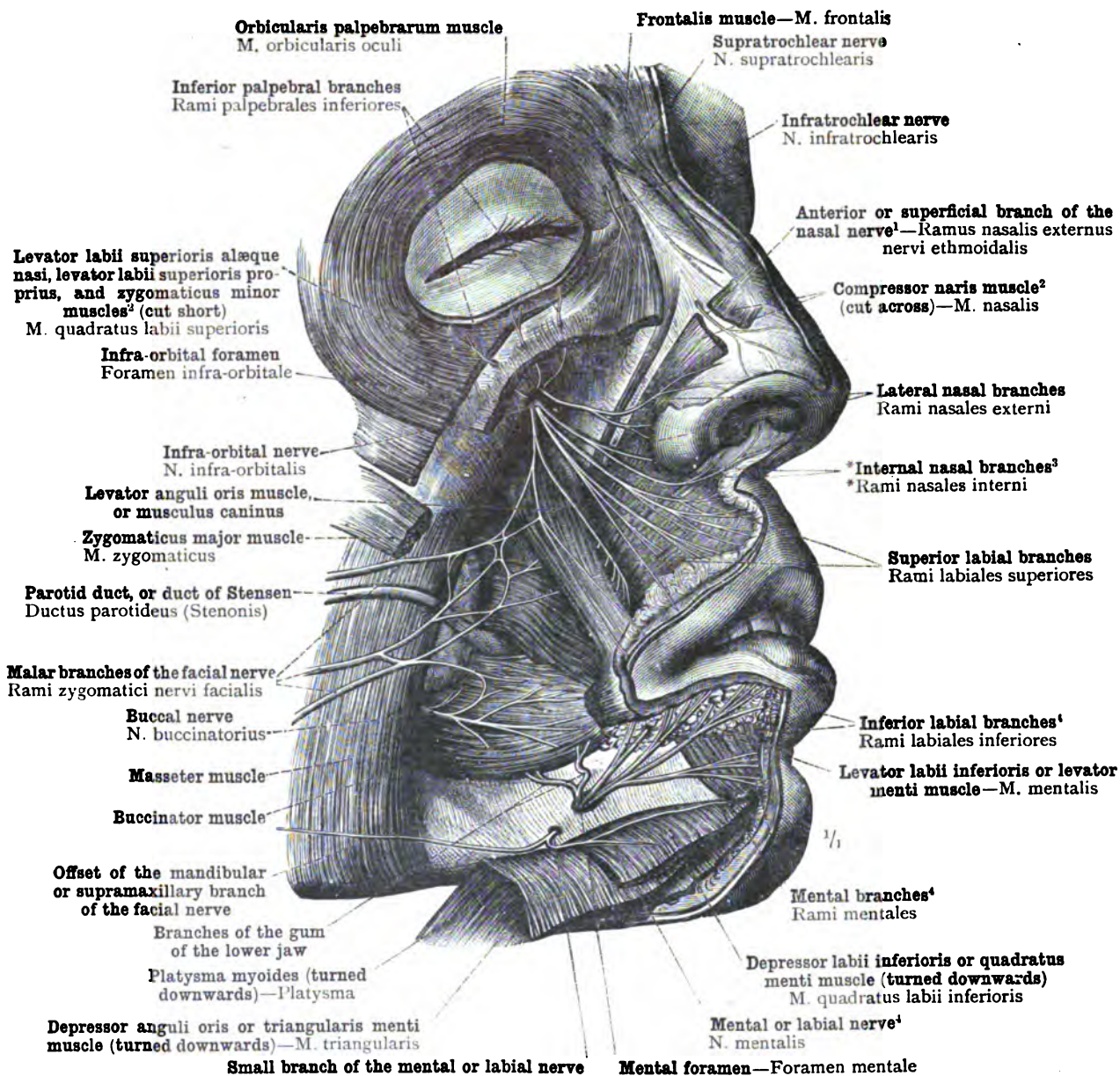
¹ See Appendix, note 454.² Formerly known also as the *gustatory nerve*.³ See Appendix, note 449 and note 7 to p. 859.⁴ See note ¹ to p. 413, in Part IV.

FIG. 1305.—THE INFERIOR DENTAL NERVE, N. ALVEOLARIS INFERIOR; ITS COURSE THROUGH THE MANDIBULAR OR INFERIOR DENTAL CANAL, WITH THE INFERIOR DENTAL PLEXUS, PLEXUS DENTALIS INFERIOR, AND ITS TERMINAL BRANCH, THE MENTAL OR LABIAL NERVE, N. MENTALIS. THE BUCCAL NERVE, N. BUCCINATORIUS. OF THE MOTOR BRANCHES OF THE INFERIOR MAXILLARY NERVE, N. MANDIBULARIS, THE ANTERIOR AND POSTERIOR DEEP TEMPORAL NERVES, NN. TEMPORALES PROFUNDI ANTERIOR ET POSTERIOR (see Appendix, note 454), AND THE MASSETERIC NERVE, N. MASSETERICUS, ARE SEEN. THE MALAR BRANCH OF THE ORBITAL OR TEMPOROMALAR NERVE, RAMUS ZYGOMATICOFACIALIS NERVI ZYGOMATICI; THE SUPERIOR LABIAL AND LATERAL NASAL BRANCHES OF THE INFRA-ORBITAL NERVE, RAMI LABIALES SUPERIORES ET RAMI NASALES EXTERNI NERVI INFRA-ORBITALIS; AND THE ANTERIOR OR SUPERFICIAL BRANCHES OF THE NASAL NERVE, RAMI NASALES EXTERNI NERVI ETHMOIDALIS. THE BRANCHES OF THE OPHTHALMIC NERVE TO THE SKIN OF THE FRONTAL REGION.

The parts were exposed by the removal of the zygomatic arch, the front of the ramus of the inferior maxillary bone, and the outer compact lamella of the body of that bone. In order to display the deep temporal nerves, the lower part of the temporal muscle was cut away.



¹ See Appendix, note 419 and note 7 to p. 839.

² See note 1 to p. 303, in Part III.

³ See Appendix, note 455.

⁴ See Appendix, note 456.

FIG. 1306.—PART OF THE FACIAL RADIATION OF THE SUPERIOR MAXILLARY NERVE, N. MAXILLARIS (THE INFRA-ORBITAL PLEXUS), WITH THE CUTANEOUS NERVES OF THE NOSE AND THE NERVES OF THE UPPER AND LOWER LIPS: THE BRANCHES OF THE INFRA-ORBITAL NERVE TO THE SKIN OF THE CHEEK, THE ALA OF THE NOSE, THE SEPTUM OF THE NOSE, AND THE LOWER LID: SUPERIOR LABIAL BRANCHES (RAMI LABIALES SUPERIORES), LATERAL NASAL AND *INTERNAL NASAL BRANCHES (RAMI NASALES EXTERNI ET INTERNI—see Appendix, notes 419, 456, and note 7 to p. 859), AND INFERIOR PALPEBRAL BRANCHES (RAMI PALPEBRALES INFERIORES). THE COMMUNICATIONS BETWEEN THESE NERVES AND THE BRANCHES OF THE FACIAL NERVE. THE DISTRIBUTION OF THE SUPRATROCHLEAR NERVE, N. SUPRATROCHLEARIS, AND THE INFRATROCHLEAR NERVE, N. INFRATROCHLEARIS, BRANCHES OF THE FIRST DIVISION OF THE FIFTH NERVE; AND THE TERMINAL RAMIFICATION OF THE BUCCAL NERVE, N. BUCCINATORIUS, AND THE MENTAL OR LABIAL NERVE, N. MENTALIS, BRANCHES OF THE THIRD DIVISION OF THE FIFTH NERVE. A SMALL BRANCH OF THE MENTAL NERVE WHICH EMERGES FROM THE INFERIOR MAXILLARY BONE BY A SPECIAL APERTURE IS SEEN TO COMMUNICATE WITH THE MANDIBULAR OR SUPRAMAXILLARY BRANCH OF THE FACIAL NERVE.

Preparation of the right side of the face after removing the skin and the superficial layer of the muscles of the face. The compressor naris muscle has been cut across, in order to display the emergence on to the outer surface of the nose of the anterior or superficial branch of the nasal nerve (ramus nasalis externus nervi nasociliaris).

Trigeminus Group.

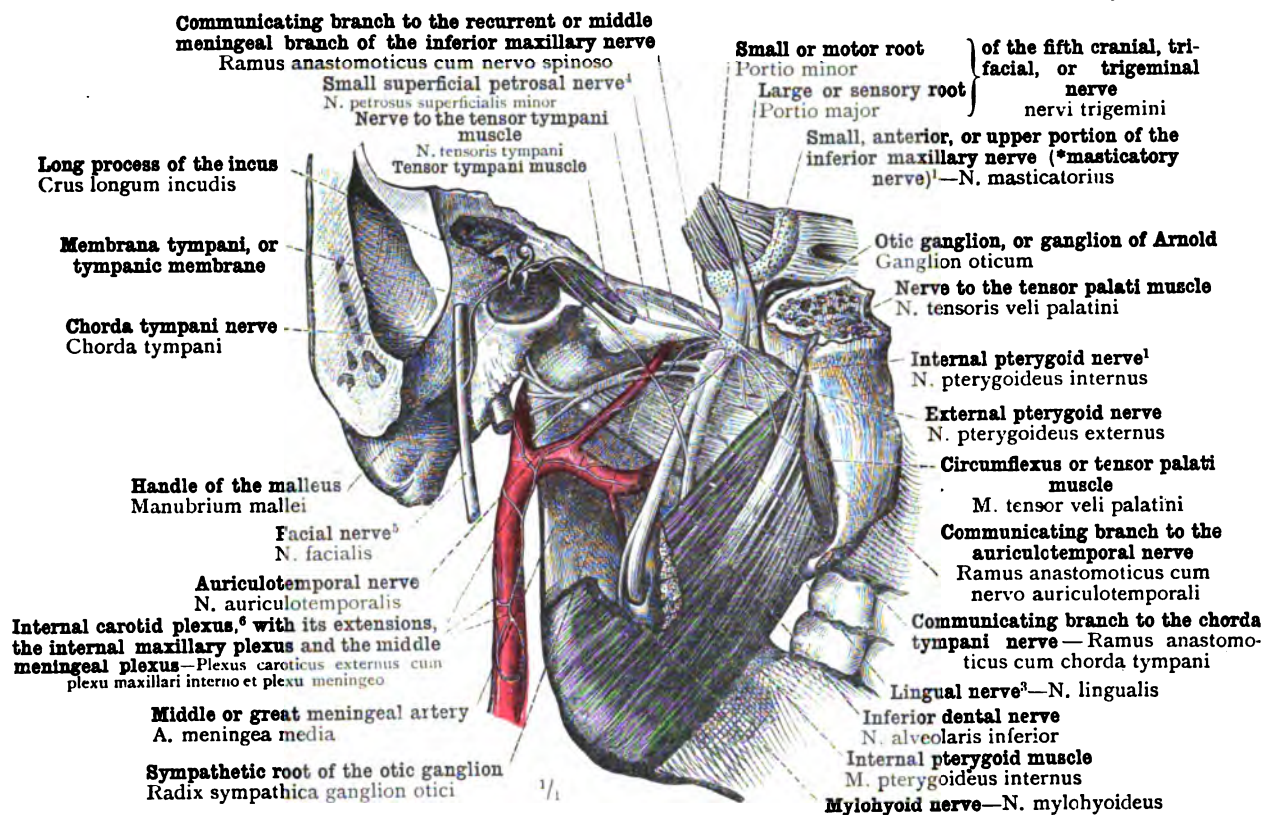


FIG. 1307.—THE OTIC GANGLION OR GANGLION OF ARNOLD, GANGLION OTICUM; ITS ROOTS AND BRANCHES. DISPLAYED ON THE LEFT SIDE OF THE HEAD, AND VIEWED FROM WITHIN.

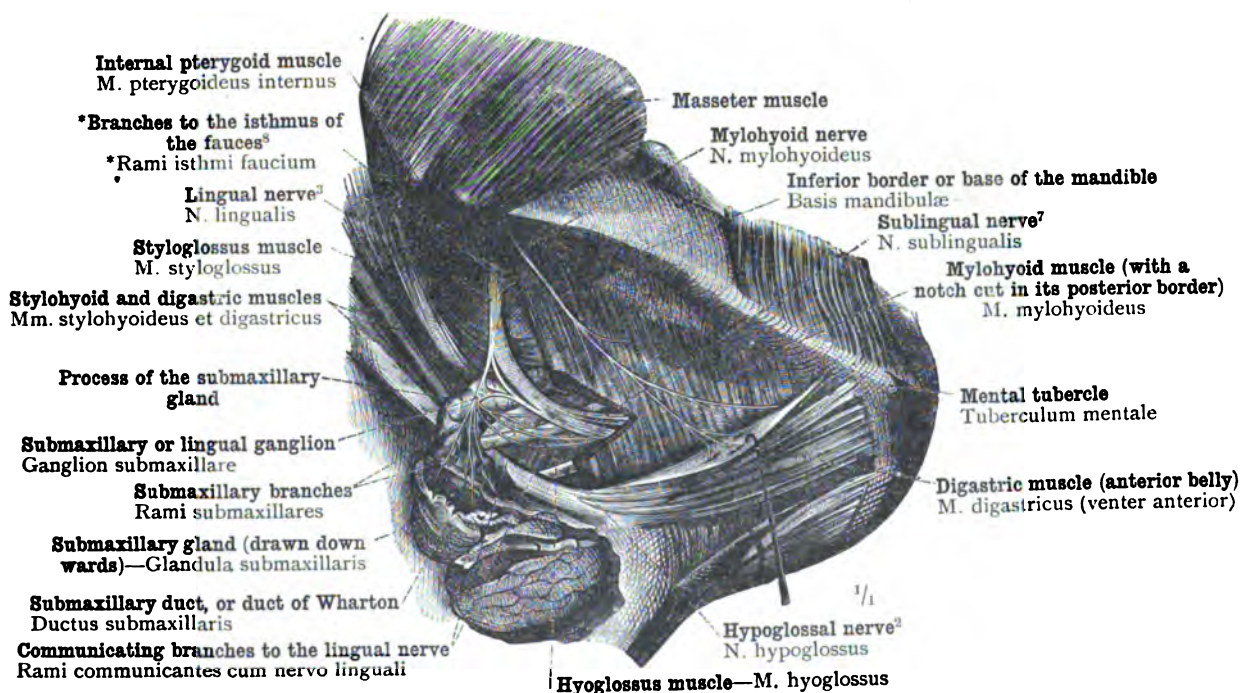


FIG. 1308.—THE SUBMAXILLARY OR LINGUAL GANGLION, GANGLION SUBMAXILLARE, AND ITS BRANCHES, WITH THE MYLOHYOID NERVE, DISPLAYED IN THE RIGHT SUBMAXILLARY REGION. SEEN OBLIQUELY FROM BELOW.

The submaxillary gland has been shelled out of its bed and drawn downwards.

¹ See Appendix, note 457.

² Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; known also as the lingual motor nerve.

³ Formerly known also as the gustatory nerve.

⁴ By Arnold called the long root of the otic ganglion. See also Appendix, note 452.

⁵ Seventh cranial nerve in Soemmerring's enumeration; portio dura of the seventh cranial nerve in that of Willis.

⁶ See note 3 to p. 859.

⁷ See Appendix, note 413.

⁸ See note 3 to p. 864.

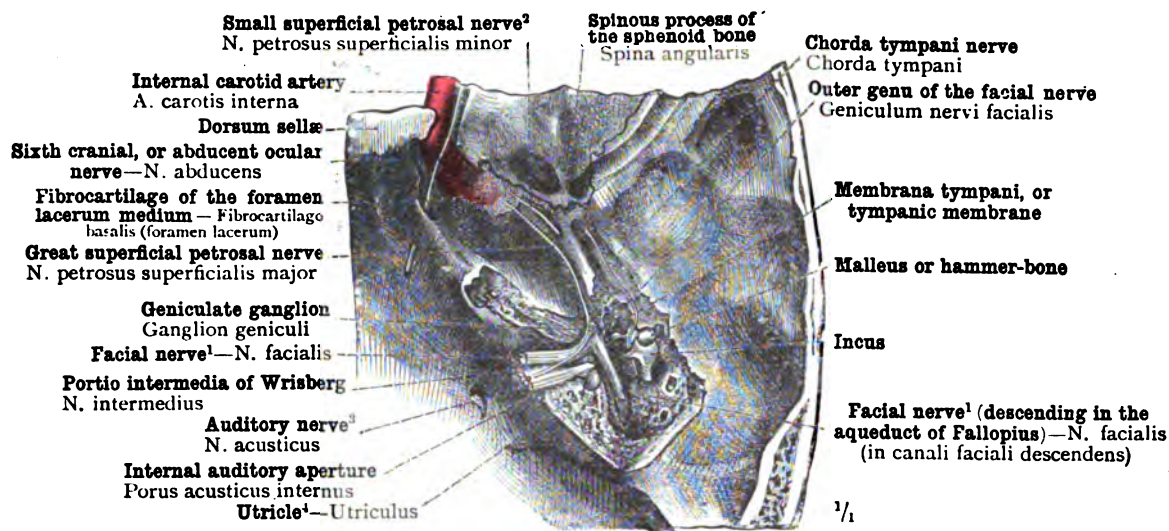


FIG. 1311.—THE CHORDA TYMPANI NERVE, CHORDA TYMPANI, AND THE GREAT SUPERFICIAL PETROSAL NERVE, N. PETROSUS SUPERFICIALIS MAJOR, DISPLAYED FROM ABOVE IN THE REGION OF THE RIGHT PETROUS BONE, THE TYMPANIC CAVITY OR TYMPANUM AND THE INTERNAL AUDITORY MEATUS HAVING BEEN OPENED UP. THE PORTIO INTERMEDIA OF WRISBERG, N. INTERMEDIUS, AND THE GENICULATE GANGLION, GANGLION GENICULI.

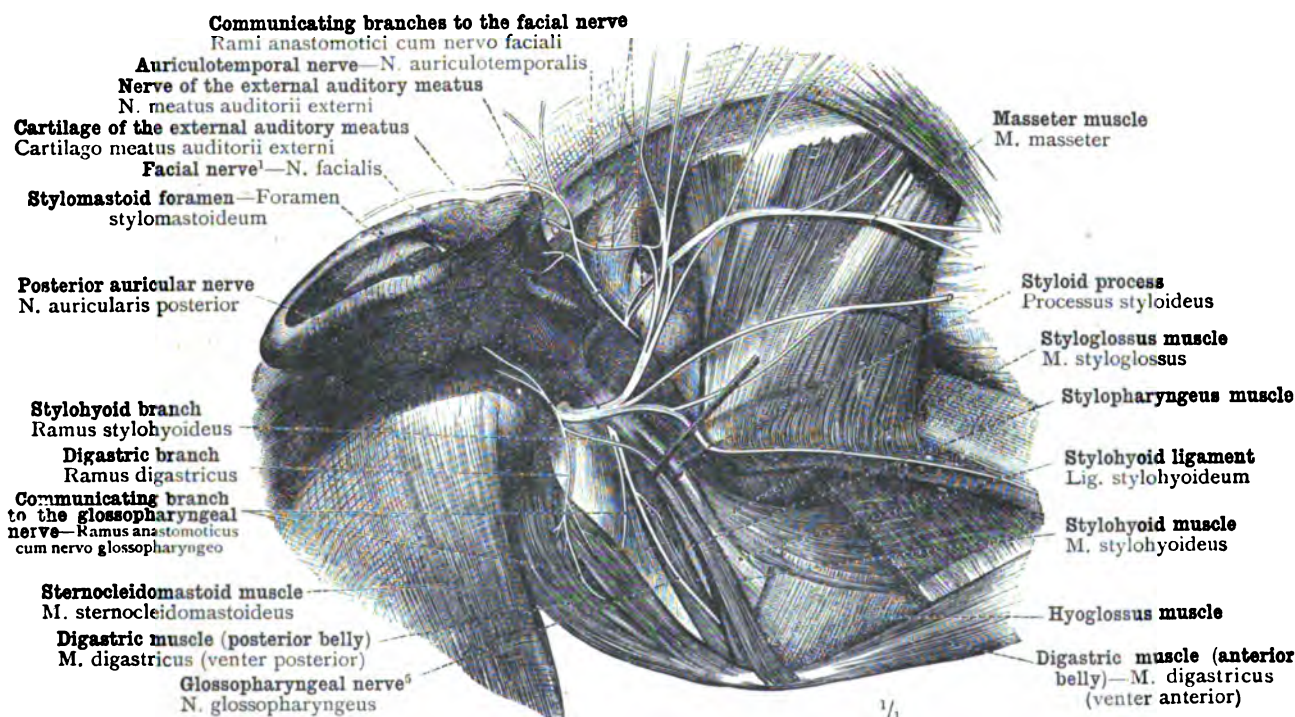


FIG. 1312.—THE EMERGENCE OF THE FACIAL NERVE, N. FACIALIS (*see note ¹ below*), FROM THE STYLOMASTOID FORAMEN, FORAMEN STYLOMASTOIDEUM, ITS RAMIFICATION IN THE RETROMANDIBULAR FOSSA, FOSSA RETROMANDIBULARIS, AND ITS COMMUNICATING BRANCHES TO THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS, AND THE AURICULOTEMPORAL NERVE, N. AURICULOTEMPORALIS, DISPLAYED ON THE RIGHT SIDE OF THE HEAD BY THE COMPLETE REMOVAL OF THE PAROTID GLAND. THE COMMUNICATING BRANCH BETWEEN THE FACIAL NERVE AND THE GLOSSOPHARYNGEAL NERVE HAS THE FORM OF A LOOP, WHICH PERFORATES THE POSTERIOR BELLY OF THE DIGASTRIC MUSCLE. SEEN OBLIQUELY FROM BELOW.

¹ Seventh cranial nerve in Soemmerring's enumeration; portio dura of the seventh cranial nerve in that of Willis.

² By Arnold called the long root of the ciliary ganglion.

³ Eighth cranial nerve in Soemmerring's enumeration; portio mollis of the seventh cranial nerve in that of Willis.

⁴ Known also as the common sinus of the membranous semicircular canals.

⁵ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.

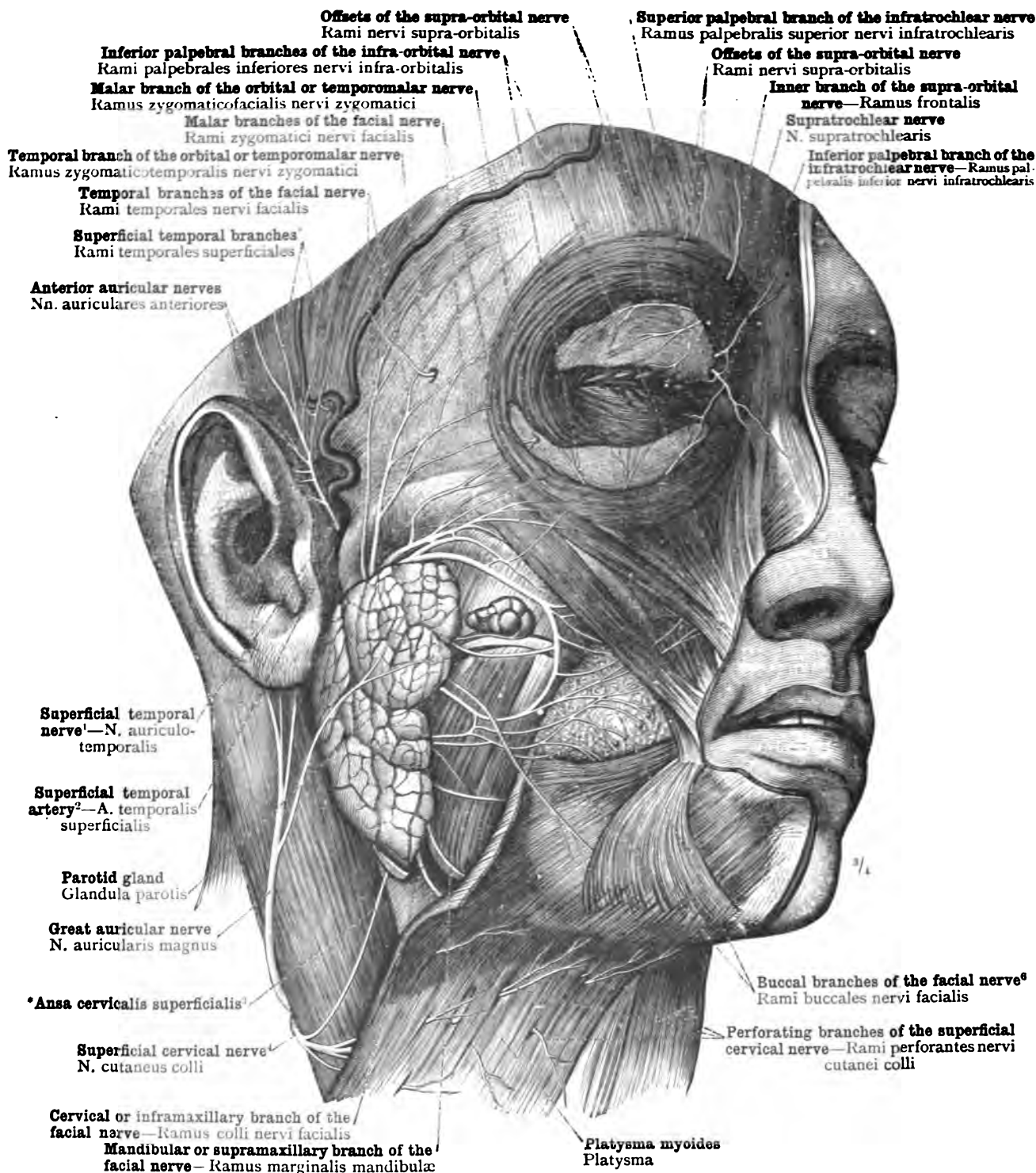


FIG. 1313.—THE FACIAL NERVE, N. FACIALIS; ITS BRANCHES AS FAR AS THEY ARE VISIBLE WHEN THE PAROTID GLAND, THE SUPERFICIAL MUSCLES OF THE FACE, AND THE BUCCAL FAT-PAD, CORPUS ADIPOSUM BUCCÆ (see note ⁵ below), ARE LEFT INTACT. RIGHT SIDE OF THE FACE. THE BRANCHES OF THE CERVICAL PLEXUS AND OF THE OPHTHALMIC NERVE, OR FIRST DIVISION OF THE FIFTH CRANIAL NERVE, TO THE FACE AND THE UPPER PART OF THE NECK; OF THE FACIAL BRANCHES OF THE SUPERIOR MAXILLARY NERVE, OR SECOND DIVISION OF THE FIFTH CRANIAL NERVE, THOSE OF THE ORBITAL OR TEMPOROMALAR NERVE, N. ZYGOMATICUS, HAVE ALONE BEEN PRESERVED.

In order to expose the course of the nerves supplying the eyelids, a part of the orbicularis palpebrarum muscle, musculus orbicularis oculi, which covers these nerves has been cut away.

¹ See Appendix, note 470.

² See Appendix to Part V., note 163.

³ See Appendix, note 460.

⁴ By Macalister called the *superficialis colli* nerve.

⁵ The *buccal fat-pad* is sometimes, but inappropriately, named the *sucking-pad*.

⁶ Also called *inferior buccolabial branches of the facial nerve*.

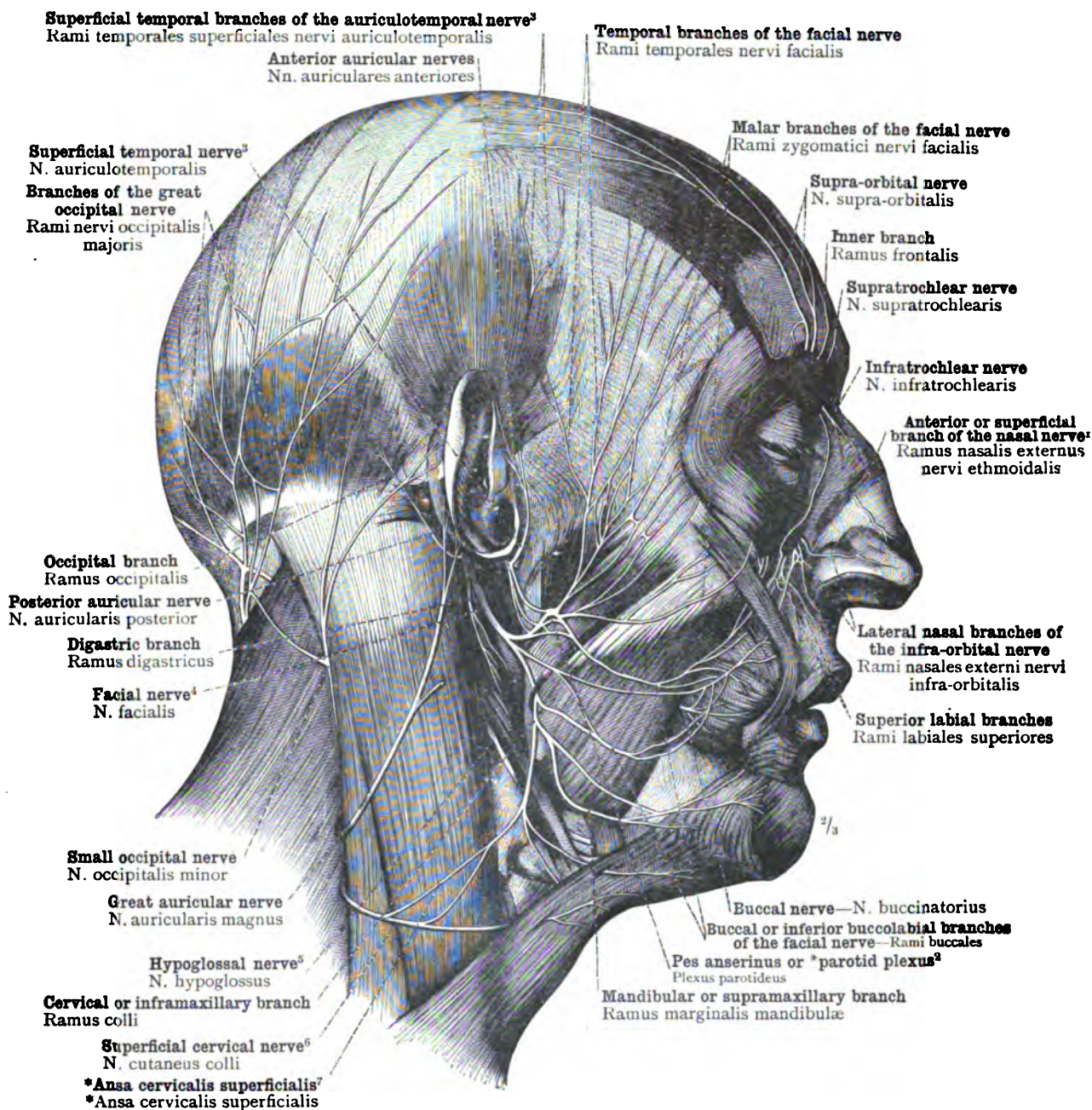


FIG. 1314.—THE RAMIFICATION OF THE FACIAL NERVE, N. FACIALIS (see note ⁴ below), DISPLAYED BY THE REMOVAL OF THE PAROTID GLAND AND SOME OF THE SUPERFICIAL MUSCLES OF THE FACE. RIGHT SIDE OF THE FACE. THE COMMUNICATING BRANCHES FROM THE FACIAL NERVE TO THE AURICULOTEMPORAL NERVE, TO THE INFRA-ORBITAL NERVE, AND TO THE SUPERFICIAL CERVICAL NERVE (see note ⁶ below). THE SENSORY NERVES OF THE FRONTAL REGION, OF THE SKIN OF THE NOSE, AND OF THE PINNA OR AURICLE; THE RAMIFICATION OF THE GREAT AND SMALL OCCIPITAL NERVES, NN. OCCIPITALES, MAJOR ET MINOR, ON THE BACK OF THE HEAD.

The upper part of the orbicularis palpebrarum muscle, musculus orbicularis oculi, and the lower part of the frontalis muscle, musculus frontalis, have been removed, in order to display the branches of the frontal nerve, nervus frontalis, emerging from the orbit. The upper and back portions of the platysma myoides have also been removed, in order to display the communication between the facial nerve and the superficial cervical nerve (*ansa cervicalis superficialis—see Appendix, note ⁴⁰⁰), and also the cervical or inframaxillary branch of the facial nerve. This latter branch has been drawn out of the interior of the retromandibular fossa by means of a hook.

¹ See Appendix, note 449 and note 7 to p. 859.

² See Appendix, note 461.

³ See Appendix, note 459.

⁴ Seventh cranial nerve in Soemmerring's enumeration; *portio dura* of the seventh cranial nerve in that of Willis.

⁵ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.

⁶ By Macalister called the superficialis colli nerve.

⁷ See Appendix, note 450.

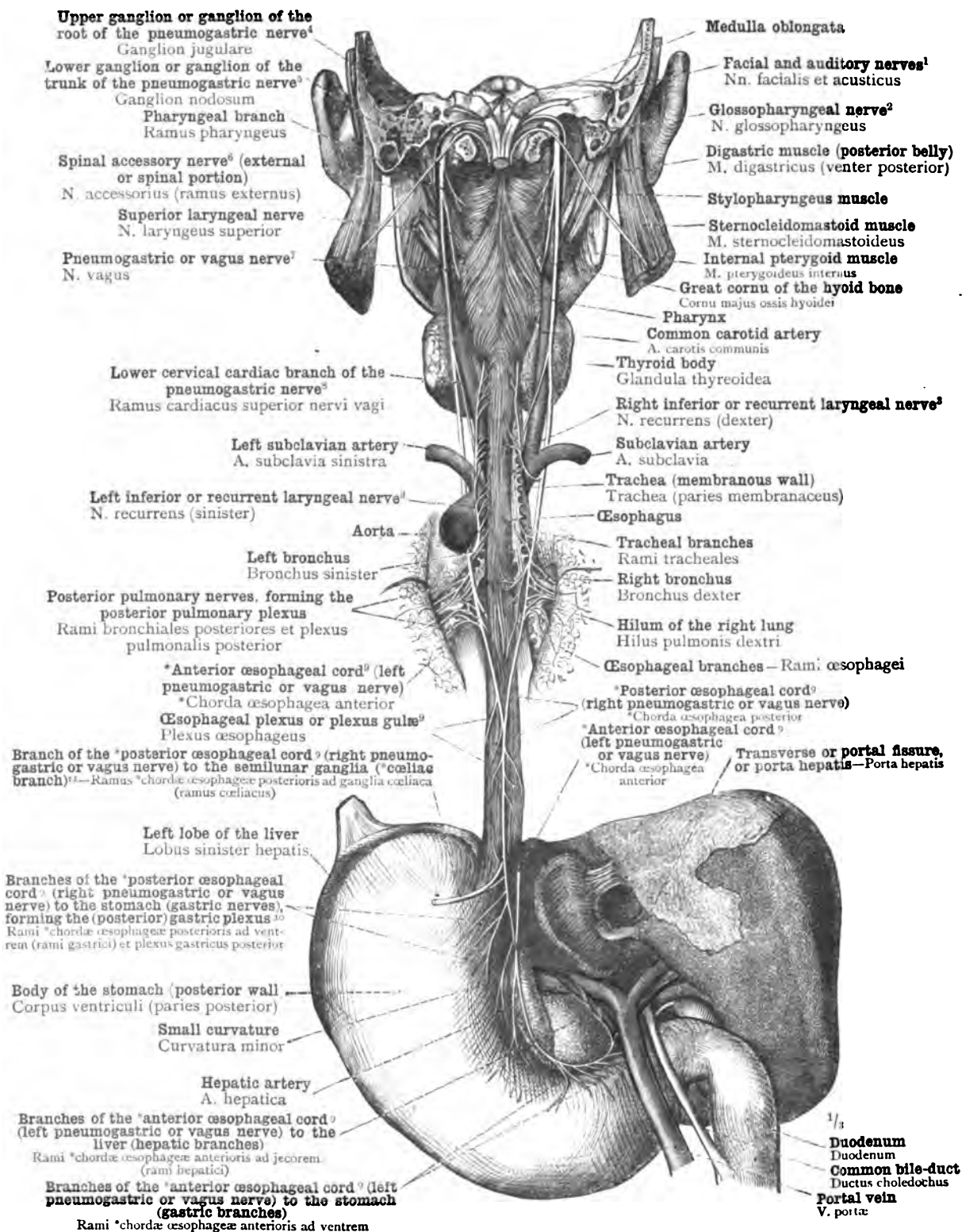


FIG. 1315.—THE PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS; VIEW OF ITS PRINCIPAL BRANCHES, AS SEEN FROM BEHIND IN RELATION TO THE VISCERA, WHICH HAVE BEEN REMOVED FROM THE BODY.

The course and distribution of the auricular branch of the pneumogastric nerve, or nerve of Arnold, ramus auricularis nervi vagi, are shown in Fig. 1310, p. 868.

¹ In Soemmerring's enumeration the *facial* is the *seventh*, the *auditory* is the *eighth cranial nerve*; in that of Willis the former is the *portio dura*, the latter the *portio mollis*, of the *seventh cranial nerve*.

² *Ninth cranial nerve* in Soemmerring's enumeration; *first trunk of the eighth cranial nerve* in that of Willis.

³ See Appendix, note 462.

⁴ See Appendix, note 463.

⁵ Sometimes called the *cranial ganglion* of the vagus nerve. Macalister uses the Latin equivalent, *ganglion cervicale vagi*.

⁶ *Eleventh cranial nerve* in Soemmerring's enumeration; *third trunk of the eighth cranial nerve* in that of Willis.

⁷ *Tenth cranial nerve* in Soemmerring's enumeration; *second trunk of the eighth cranial nerve* in that of Willis.

⁸ See Appendix, note 422.

⁹ See Appendix, note 444.

¹⁰ See Appendix, note 465.

¹¹ See Appendix, note 466.

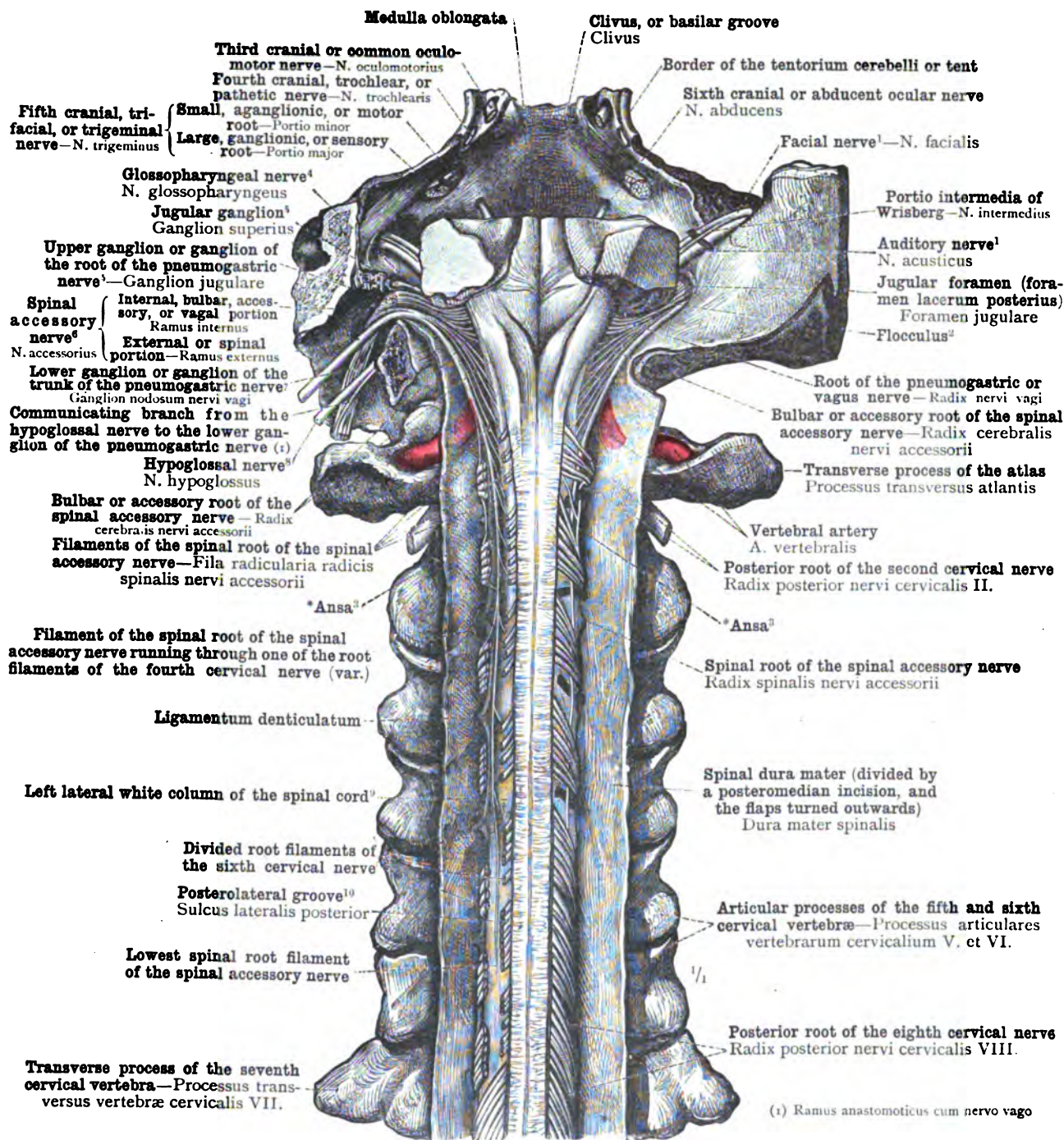


FIG. 1316.—THE ROOTS OF THE PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS (see note ¹¹ below), AND THE SPINAL ACCESSORY NERVE, N. ACCESSORIUS (see note ⁶ below); THE DIVISION OF THE SPINAL ACCESSORY NERVE INTO AN INTERNAL, BULBAR, ACCESSORY, OR VAGAL PORTION, RAMUS INTERNUS, AND AN EXTERNAL OR SPINAL PORTION, RAMUS EXTERNUS. SEEN FROM BEHIND.

After removing the tabular portion of the occipital bone and the arches of the vertebrae, a posteromedian incision was made through the spinal dura mater and the flaps were turned outwards, the arachnoid was removed, and on the left side those portions of the posterior roots of the spinal nerves which cover the spinal root filaments of the spinal accessory nerve were cut out; on the right side strips of black paper were passed beneath the spinal root of this nerve. On the left side the nerves emerging through the jugular foramen (foramen jugulare, foramen lacerum posterius) were exposed.

¹ In Soemmerring's enumeration the facial is the seventh, the auditory the eighth cranial nerve; in that of Willis the former is the portio dura, the latter the portio mollis, of the seventh cranial nerve.

² Or subpeduncular lobe (Ellis).

³ See Appendix, note 415.

⁴ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.

⁵ See Appendix, note 467.

⁶ Eleventh cranial nerve in Soemmerring's enumeration; third trunk of the eighth cranial nerve in that of Willis.

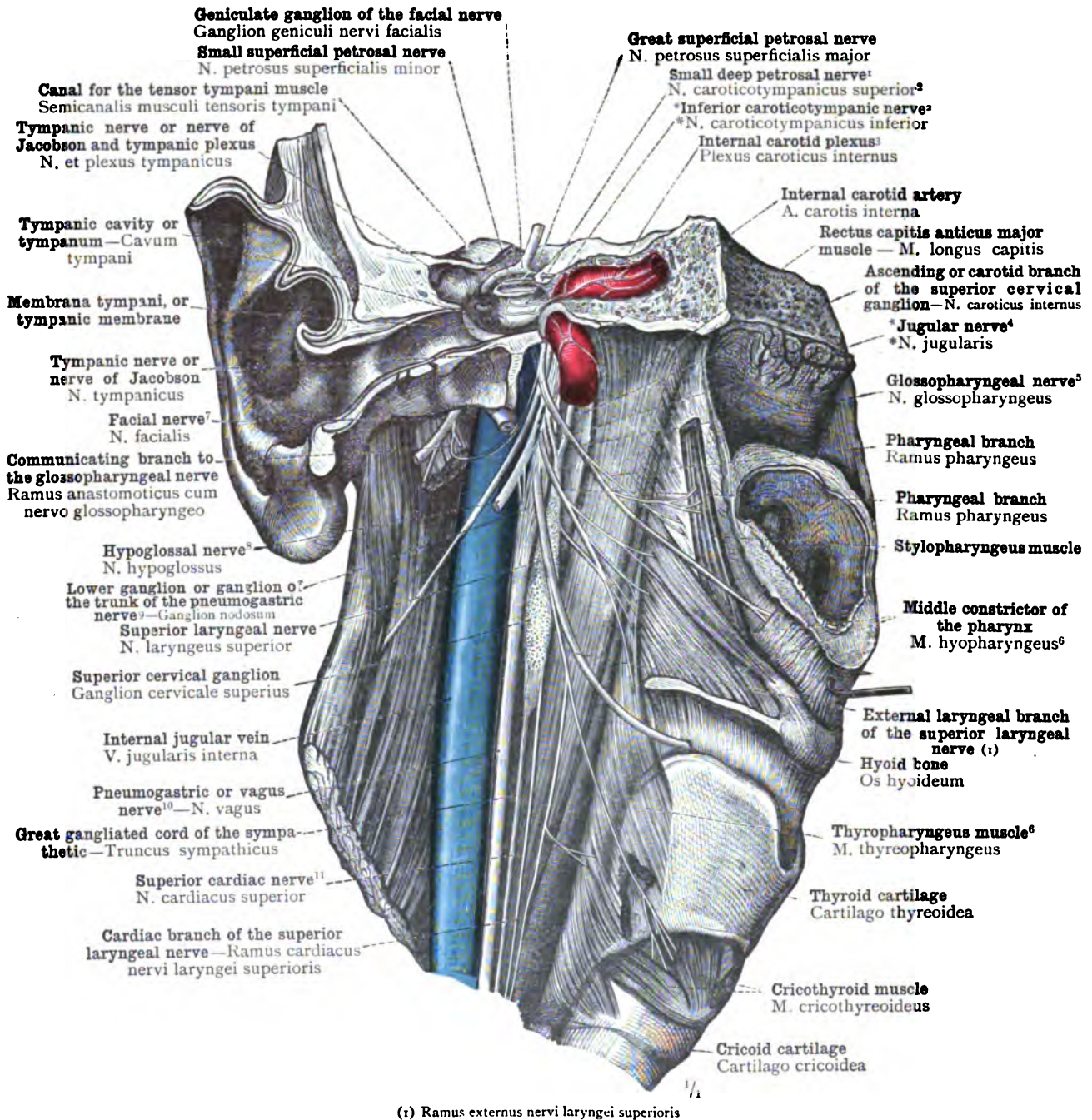
⁷ See note 5 to p. 872.

⁸ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; known also as the lingual motor nerve.

⁹ See Appendix, note 39.

¹⁰ See Appendix, note 33.

¹¹ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.



(r) Ramus externus nervi laryngei superioris

FIG. 1317.—THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS (see note ⁵ below); ITS COMMUNICATING BRANCH TO THE FACIAL NERVE, N. FACIALIS (see note ⁷ below); THE TYMPANIC NERVE (N. TYMPANICUS), TYMPANIC PLEXUS (PLEXUS TYMPANICUS), SMALL DEEP PETROSAL NERVE (N. CAROTICOTYMPANICUS SUPERIOR—see Appendix, note ⁴⁵²), *INFERIOR CAROTICOTYMPANIC NERVE (N. CAROTICOTYMPANICUS INFERIOR—see Appendix, note ⁴⁶⁸); THE BRANCHES OF THE GLOSSOPHARYNGEAL NERVE TO THE PHARYNX AND TO THE STYLOPHARYNGEUS MUSCLE. THE COMMUNICATION OF THE PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS (see note ¹⁰ below), WITH THE HYPOGLOSSAL NERVE, N. HYPOGLOSSUS (see note ⁸ below), AND WITH THE SYMPATHETIC NERVOUS SYSTEM, AND THE PHARYNGEAL AND LARYNGEAL BRANCHES OF THE PNEUMOGASTRIC NERVE.

On the right side of the head a saw-cut was made through the external auditory meatus, the tympanum, and the anterior wall of the carotid canal, and the basilar portion or process of the occipital bone was divided transversely. The pharynx and the soft palate were detached from the base of the skull, and the pharynx with the stylopharyngeus muscle and the larynx was drawn to the left.

¹ See Appendix, note 452.

² See Appendix, note 468.

³ See note 3 to p. 859.

⁴ See Appendix, note 469.

⁵ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.

⁶ See Appendix, note 470.

⁷ Seventh cranial nerve in Soemmerring's enumeration; portio dura of the seventh in that of Willis.

⁸ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.

⁹ See note 5 to p. 872.

¹⁰ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

¹¹ Also called the superficial cardiac nerve.

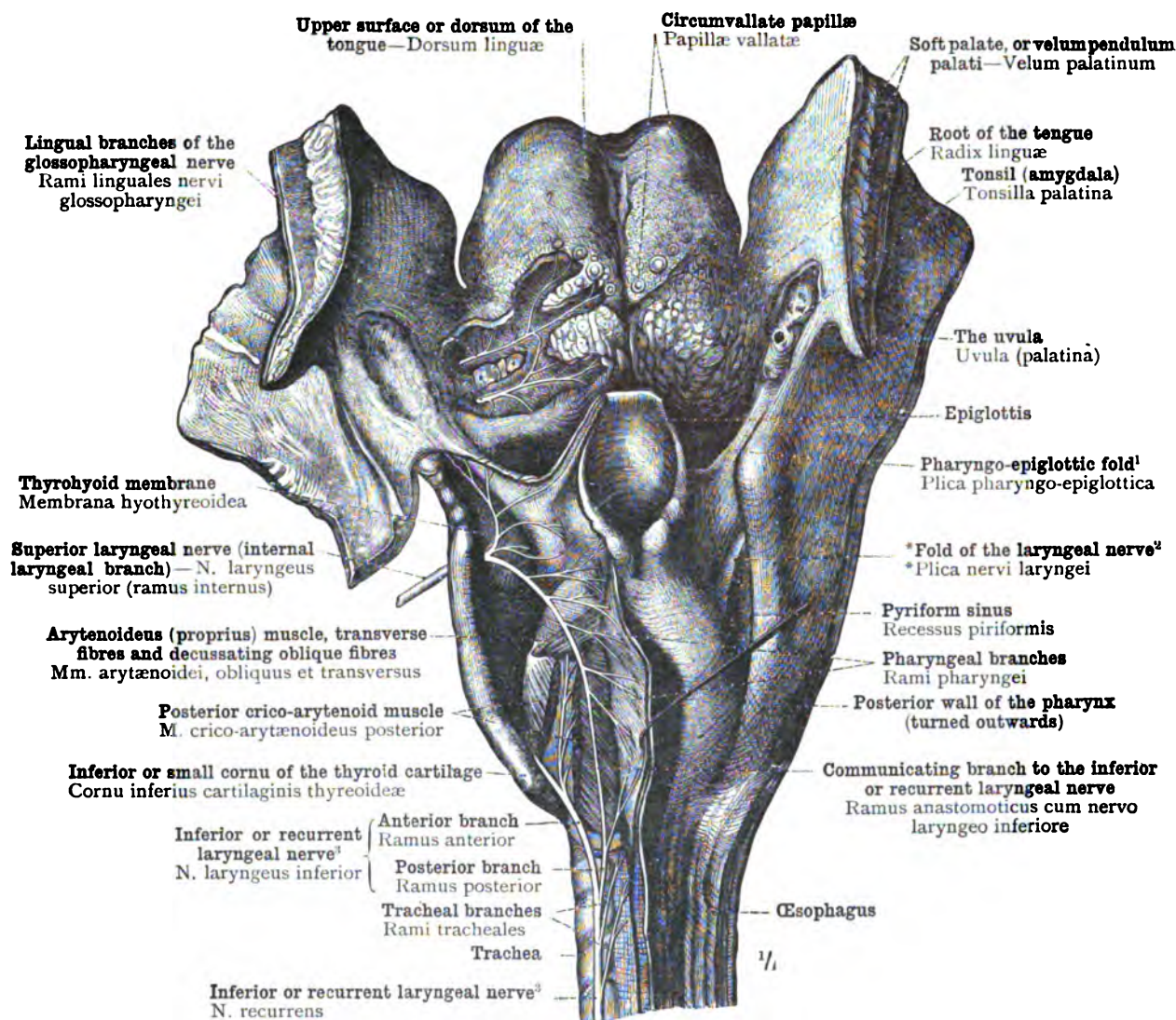
¹ See note 7 to p. 415, in Part IV.² See note 3 to p. 434, in Part IV.³ See Appendix, note 462.

FIG. 1318.—THE PERIPHERAL OFFSETS OF THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS TO THE MUCOUS MEMBRANE OF THE ROOT OF THE TONGUE AND TO THE CIRCUMVALLATE PAPILLÆ. (THE BRANCHES OF THIS NERVE TO THE EDGE OF THE TONGUE ARE SHOWN IN FIG. 1324, p. 381.) THE OFFSETS OF THE INTERNAL LARYNGEAL BRANCH OF THE SUPERIOR LARYNGEAL NERVE, RAMUS INTERNUS NERVI LARYNGEI SUPERIORIS, TO THE MUCOUS MEMBRANE OF THE LARYNX AND THE PHARYNX, AND THE COMMUNICATING BRANCH TO THE INFERIOR OR RECURRENT LARYNGEAL NERVE, N. LARYNGEUS INFERIOR (see Appendix, note 462). SEEN FROM BEHIND.

The tongue, the soft palate, and the pharynx having been excised, the soft palate was divided by a median incision and its halves turned right and left. The branches of the glossopharyngeal nerve were exposed by the partial removal of the mucous membrane of the root of the tongue. In order to display the ramification of the superior laryngeal nerve, the mucous membrane of the pharynx was raised and turned inwards on the left side from the pharyngo-epiglottic fold above to the junction of the pharynx with the œsophagus below

Vagus Group.

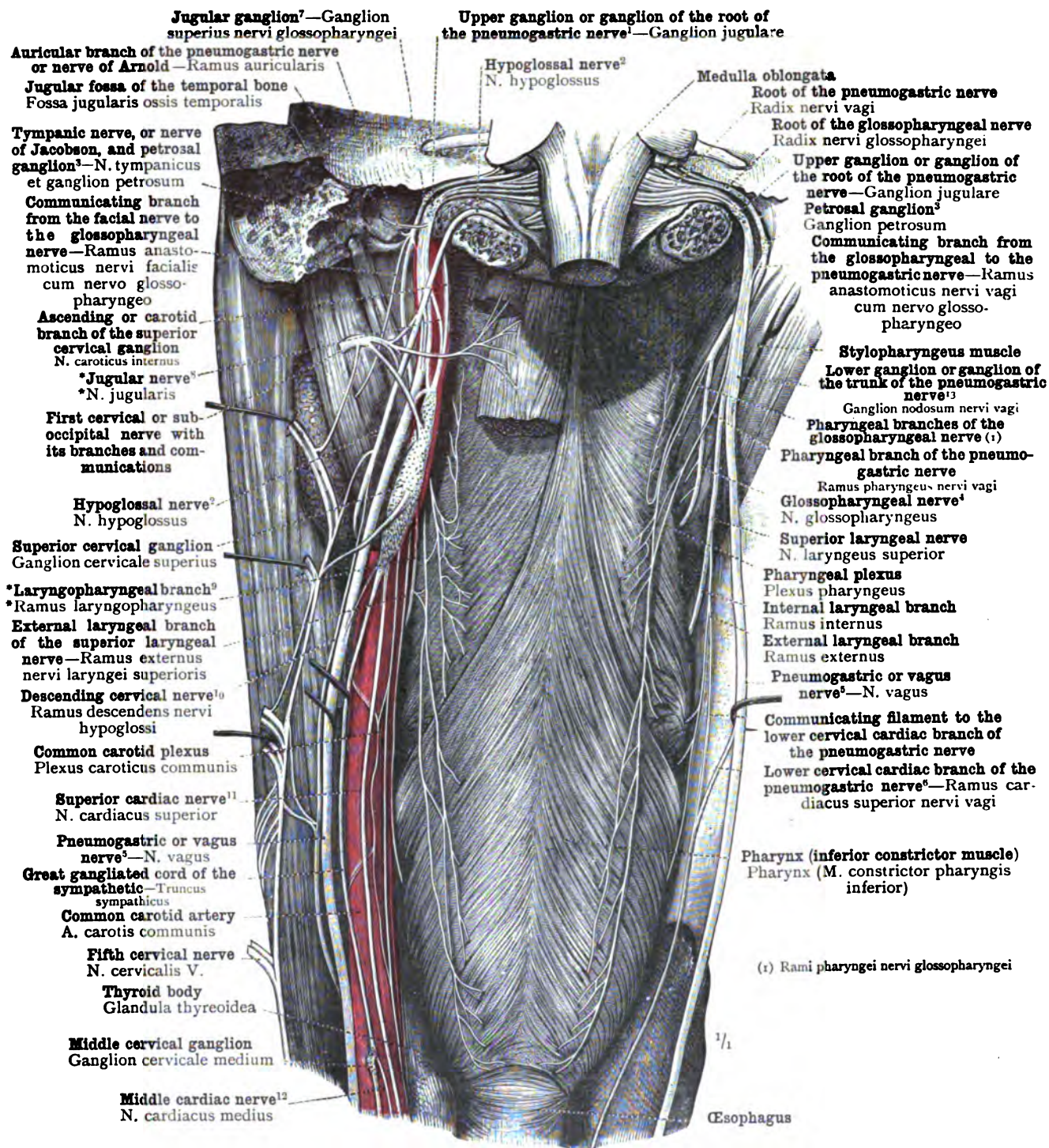


FIG. 1319.—THE CEPHALIC PORTION AND THE UPPER PART OF THE CERVICAL PORTION OF THE PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS, SEEN FROM BEHIND. ON THE LEFT SIDE THE COMMUNICATIONS OF THE PNEUMOGASTRIC NERVE WITH THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS, AND THE HYPOGLOSSAL NERVE, N. HYPOGLOSSUS, AS WELL AS THE COMMUNICATIONS OF THE SYMPATHETIC NERVOUS SYSTEM WITH THE NERVES JUST NAMED AND WITH THE UPPER CERVICAL NERVES, ARE DISPLAYED; ON THIS SIDE ALSO THE UPPER EXTREMITIES OF THE RECTUS CAPITIS ANTICUS MUSCLES, MAJOR AND MINOR, HAVE BEEN PRESERVED. ON THE RIGHT SIDE THE PNEUMOGASTRIC AND GLOSSOPHARYNGEAL NERVES ONLY, WITH THEIR PHARYNGEAL BRANCHES, RAMI PHARYNGEI, AND THE PHARYNGEAL PLEXUS, PLEXUS PHARYNGEUS, ARE DISPLAYED.

¹ See Appendix, note 447.

² *Twelfth cranial nerve* in Soemmerring's enumeration, *ninth* in that of Willis; also known as the *lingual motor nerve*.

³ Known also as *Andersch's ganglion*.

⁴ *Ninth cranial nerve* in Soemmerring's enumeration; *first trunk of the eighth cranial nerve* in that of Willis.

⁵ *Tenth cranial nerve* in Soemmerring's enumeration; *second trunk of the eighth cranial nerve* in that of Willis.

⁶ See Appendix, note 422. ⁷ See Appendix, note 427.

⁸ This name is used neither by Quain nor by Macalister.

⁹ Also called the *superficial cardiac nerve*.

¹⁰ See Appendix, note 420.

¹¹ See note 5 to p. 872. ¹² Also called the *great or deep cardiac nerve*.

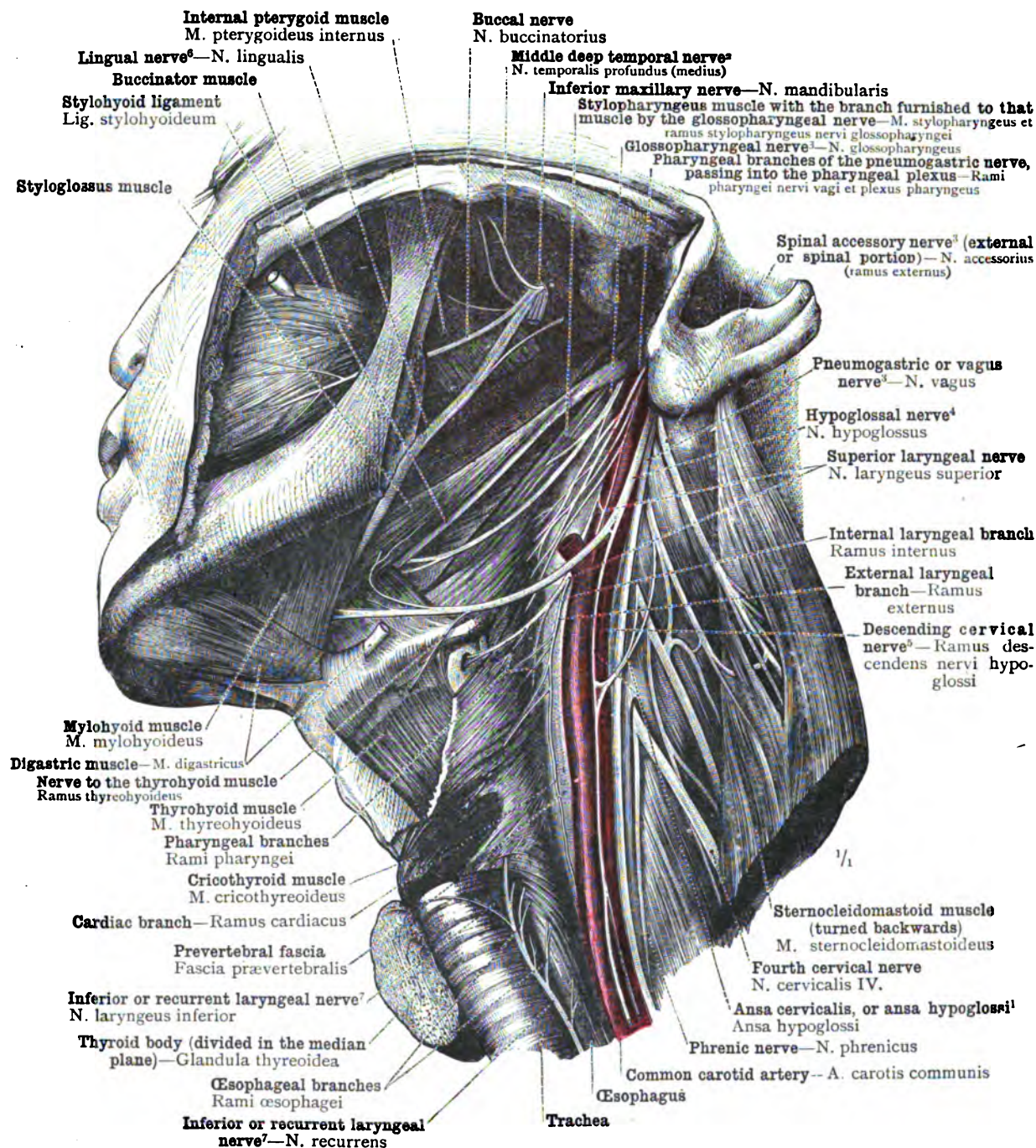


FIG. 1320.—THE HYPOGLOSSAL NERVE, N. HYPOGLOSSUS (see note ⁴ below), DISPLAYED ON THE LEFT SIDE OF THE NECK; ITS DESCENDING BRANCH, THE DESCENDING CERVICAL NERVE, RAMUS DESCENDENS NERVI HYPOGLOSSI (see Appendix, note ⁴²⁰), WITH THE ANSA CERVICALIS OR ANSA HYPOGLOSSI (see note ¹ below). WITH REGARD TO THE DISTRIBUTION OF THE DESCENDING CERVICAL NERVE, see Fig. 1249, p. 817; AND WITH REGARD TO THE TERMINAL EXPANSION OF THE HYPOGLOSSAL NERVE IN THE TONGUE, see Fig. 1325, p. 882. THE MUTUAL RELATIONS OF THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS, AND THE PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS (see note ³ below); THE PHARYNGEAL BRANCHES, RAMI PHARYNGEI, OF THESE NERVES, FORMING THE PHARYNGEAL PLEXUS, PLEXUS PHARYNGEUS. THE EXTERNAL OR SPINAL PORTION, RAMUS EXTERNUS, OF THE SPINAL ACCESSORY NERVE, N. ACCESSORIUS (see note ³ below), AND ITS COMMUNICATION WITH THE SECOND AND THIRD CERVICAL NERVES. A PART OF THE RAMIFICATION OF THE INFERIOR MAXILLARY NERVE, N. MANDIBULARIS.

The posterior belly of the digastric muscle and the stylohyoid muscle have been removed, and the sternocleidomastoid muscle has been turned backwards.

¹ Also called *ansa infrahyoidea*. See Appendix, note ⁴²¹.

² In Fig. 1305, p. 865, the author shows anterior and posterior deep temporal nerves only, and these are the only deep temporal nerves mentioned in Von Langer and Toldt's "Anatomy" (see Appendix, note ⁴⁵¹). In this figure, however, a middle deep temporal nerve also is shown.

³ In Soemmerring's enumeration the glossopharyngeal is the ninth cranial nerve, the pneumogastric the tenth, and the spinal accessory the eleventh; in that of Willis they are respectively the first, second, and third trunks of the eighth cranial nerve.

⁴ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.

⁵ See Appendix, note ⁴²².

⁶ Formerly known also as the gustatory nerve.

⁷ See Appendix, note ⁴²³.

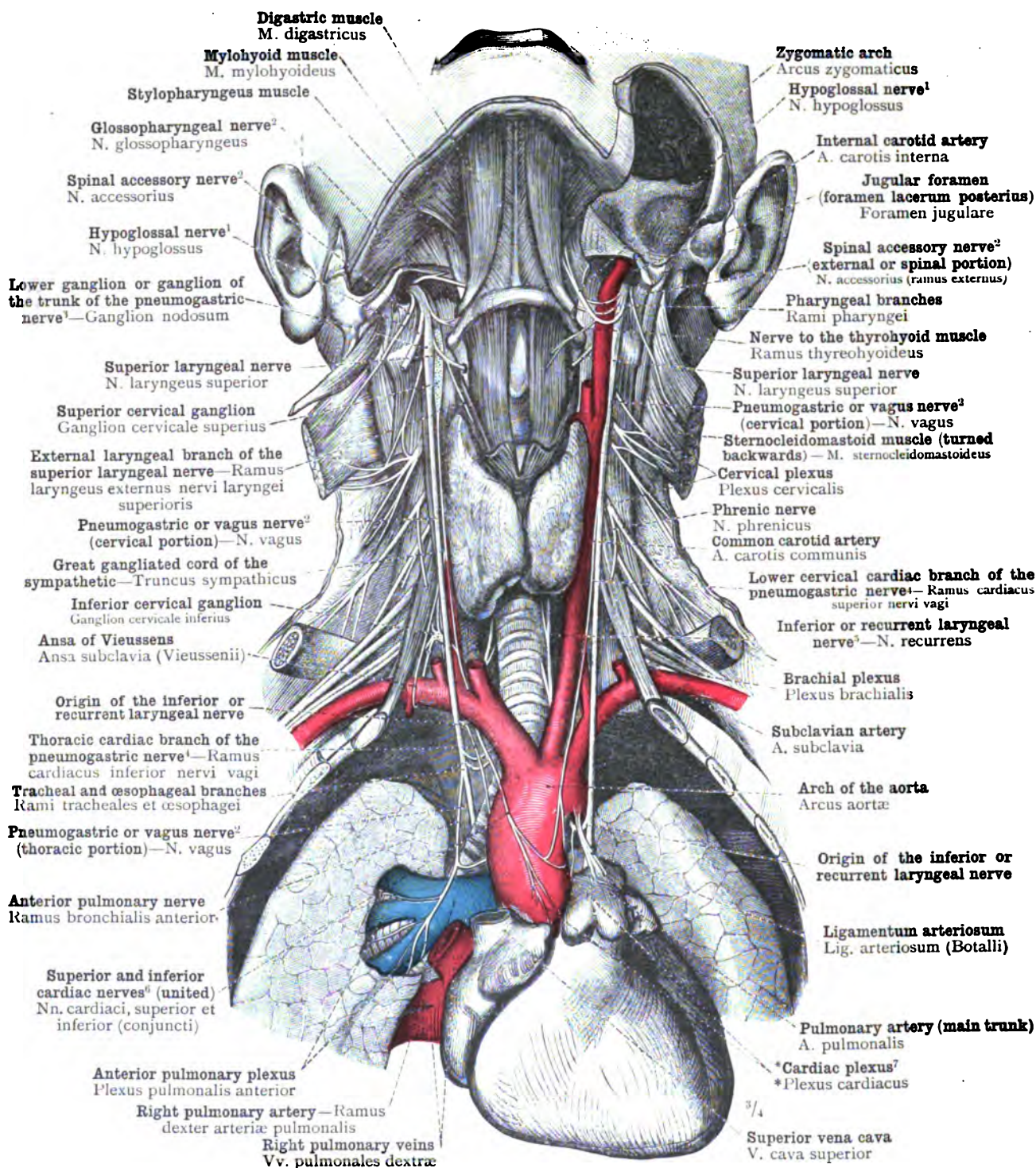


FIG. 1321.—THE CERVICAL PORTION AND THE UPPERMOST PART OF THE THORACIC PORTION OF THE PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS (see note ² below), SEEN FROM BEFORE; THE CARDIAC BRANCHES, RAMI CARDIACI, AND THE ANTERIOR PULMONARY BRANCH, RAMUS BRONCHIALIS ANTERIOR, OF THIS NERVE. THE ORIGIN OF THE INFERIOR OR RECURRENT LARYNGEAL NERVE, N. RECURRENS (see Appendix, note ⁴⁶³) FROM THE PNEUMOGASTRIC TRUNK. ON THE RIGHT SIDE OF THE BODY THE GREAT GANGLIATED CORD OF THE SYMPATHETIC IS ALSO DISPLAYED.

The head is bent strongly backwards.

¹ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.

² In Soemmerring's enumeration the glossopharyngeal nerve is the ninth cranial nerve, the pneumogastric the tenth, and the spinal accessory the eleventh; in that of Willis they are respectively the first, second, and third trunks of the eighth cranial nerve.

³ See note ⁵ to p. 872.

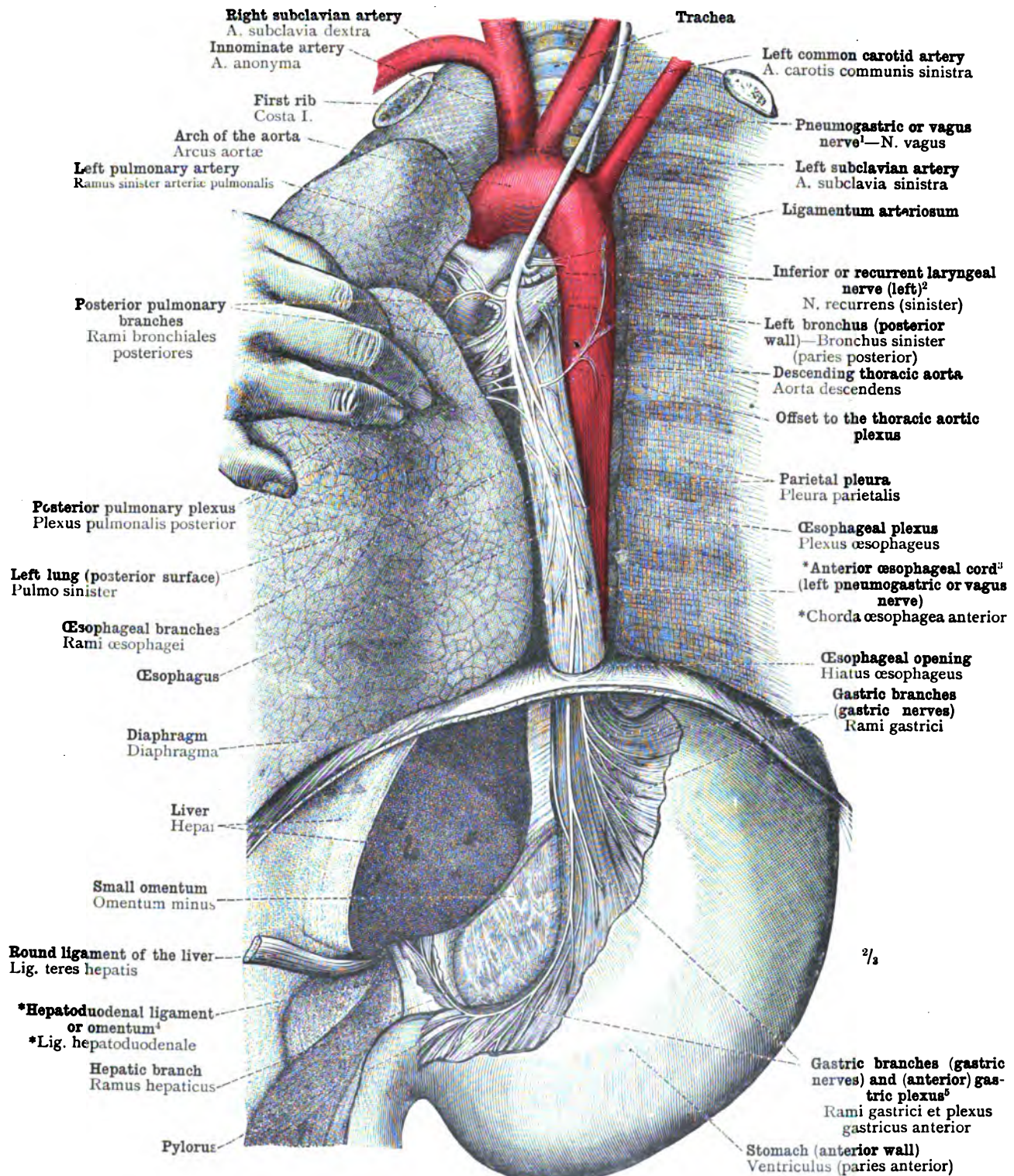
⁴ See Appendix, note ⁴⁷².

⁵ See Appendix, note ⁴⁷³.

⁶ The superior cardiac nerve is known also as the superficial cardiac, and the middle cardiac as the deep or great cardiac nerve.

⁷ See Appendix, note ⁴⁷⁴.

Vagus Group.



¹ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.
² See Appendix, note 462.
³ See Appendix, note 464.
⁴ See Appendix to Part IV., note 42.

FIG. 1322.—THE THORACIC PORTION OF THE LEFT PNEUMOGASTRIC OR VAGUS NERVE, N. VAGUS (see note ¹ above), SEEN FROM BEFORE. THE POSTERIOR PULMONARY BRANCHES, RAMI BRONCHIALES POSTERIORES, THE ESOPHAGEAL PLEXUS, PLEXUS ESOPHAGEUS, AND THE RAMIFICATION OF THE *ANTERIOR (ESOPHAGEAL CORD (LEFT PNEUMOGASTRIC OR VAGUS NERVE), *CHORDA ESOPHAGEA ANTERIOR (see Appendix, note 464), ON THE ANTERIOR WALL OF THE STOMACH. (COMPARE WITH THIS FIGURE FIG. 1315, p. 872.)

The left lung has been drawn out of the thoracic cavity and turned to the right.

Vagus Group.

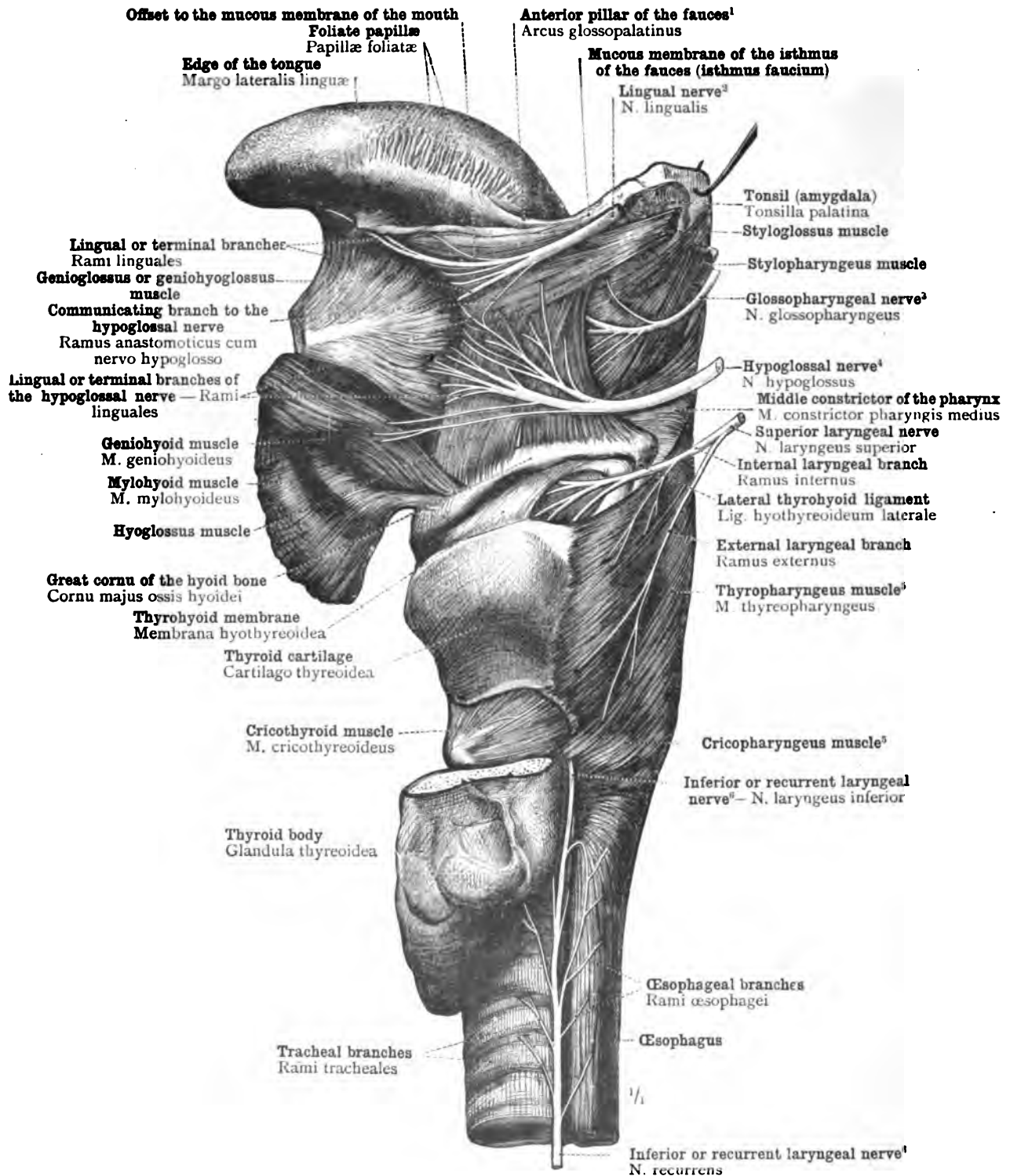


FIG. 1323.—THE DISTRIBUTION OF THE LINGUAL NERVE, N. LINGUALIS (see note ² below), THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS (see note ³ below), AND THE HYPOGLOSSAL NERVE, N. HYPOGLOSSUS (see note ⁴ below), ALSO OF THE SUPERIOR LARYNGEAL NERVE, N. LARYNGEUS SUPERIOR, AND THE INFERIOR OR RECURRENT LARYNGEAL NERVE, N. RECURRENS (see Appendix, note ⁶), AS SEEN FROM THE LEFT SIDE ON THE OUTER SURFACE OF THE ISOLATED CEPHALIC AND CERVICAL VISCERA.

In order to lay bare the cricothyroid muscle, musculus cricothyroideus, and the nerve to the cricothyroid muscle⁶, the upper half of the left lateral lobe of the thyroid body was cut away.

¹ Known also as the anterior palatine, or glossopalatine, arch.

² Formerly known also as the gustatory nerve.

³ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.

⁴ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.

⁵ The thyropharyngeus muscle is the upper part, the cricopharyngeus muscle the lower part, of the inferior constrictor of the pharynx. See Fig. 706, p. 433, in Part IV.

⁶ See Appendix, note ⁴⁶².

Vagus Group.

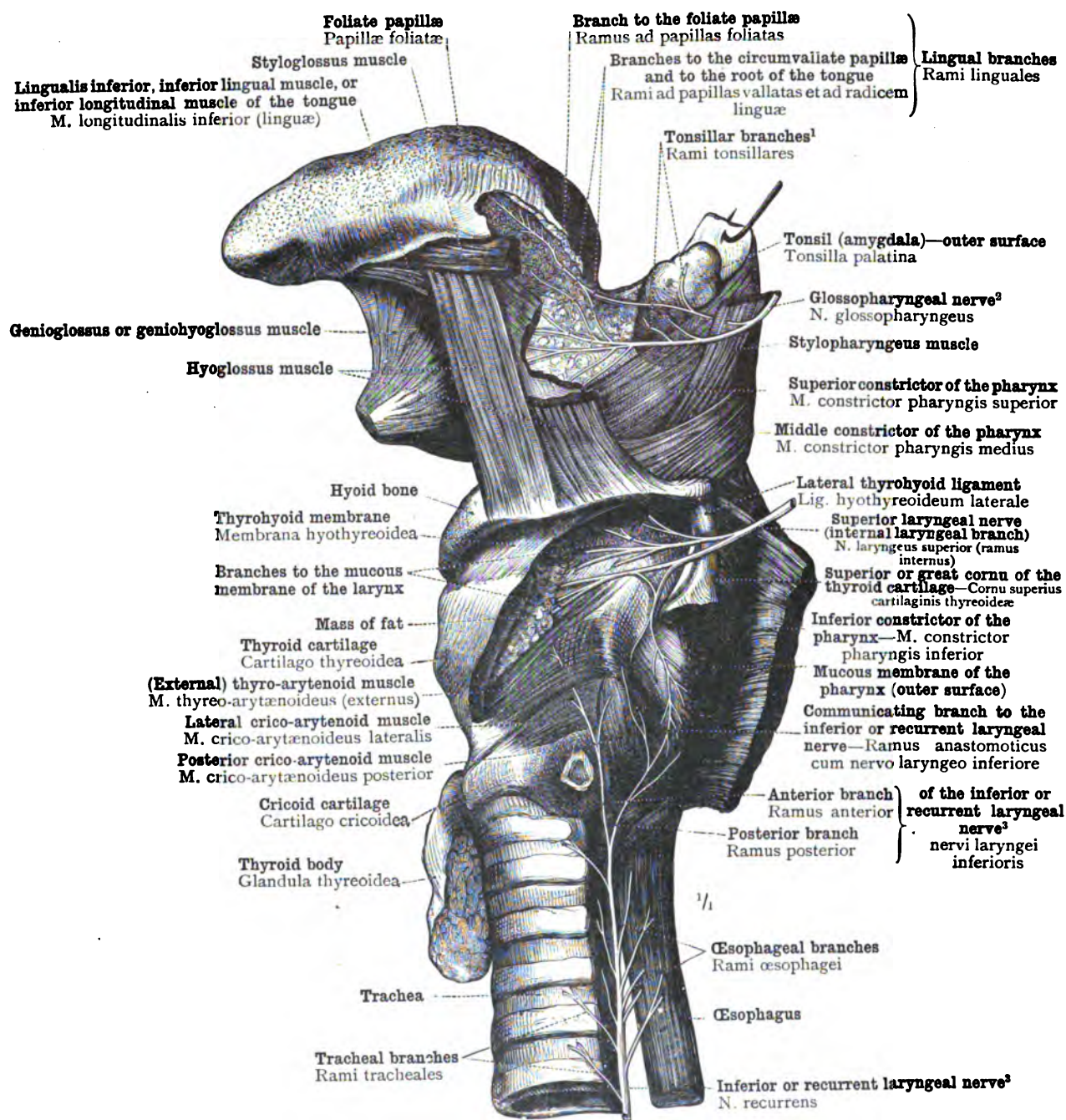
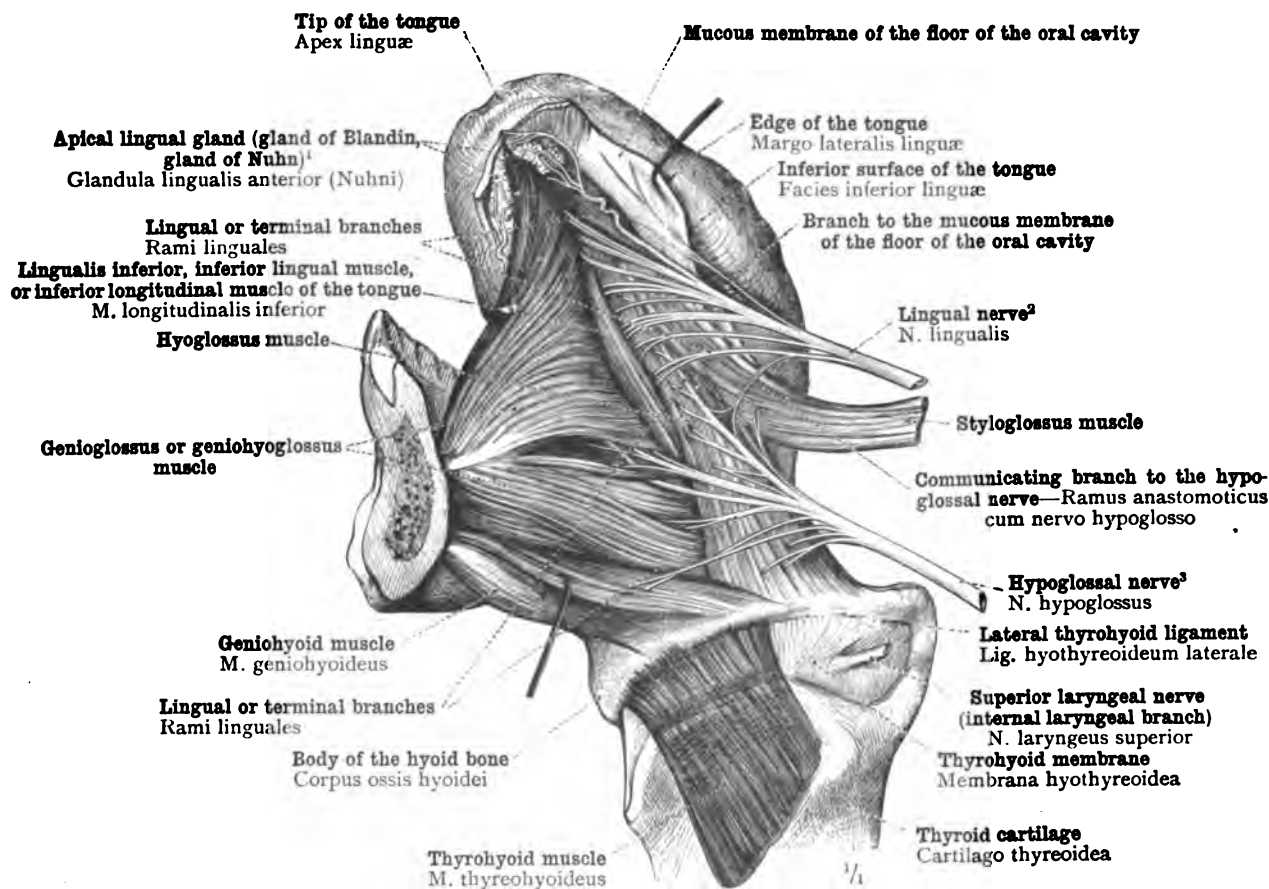


FIG. 1324.—THE TERMINAL RAMIFICATION OF THE GLOSSOPHARYNGEAL NERVE, N. GLOSSOPHARYNGEUS (see note ² below) IN THE REGION OF THE ISTHMUS OF THE FAUCES, ISTHMUS FAUCIUM, ON THE OUTER SURFACE OF THE TONSIL (TONSILLA PALATINA), AND ON THE EDGE OF THE TONGUE, MARGO LATERALIS LINGUÆ. THE DISTRIBUTION OF THE SUPERIOR LARYNGEAL NERVE, N. LARYNGEUS SUPERIOR, AND THE INFERIOR OR RECURRENT LARYNGEAL NERVE, N. LARYNGEUS INFERIOR (see Appendix, note ⁴⁶²), TO THE LARYNX AND THE PHARYNX, DISPLAYED BY THE REMOVAL OF THE GREATER PART OF THE LEFT ALA OF THE THYROID CARTILAGE AND OF THE INFERIOR CONSTRICTOR OF THE PHARYNX, M. CONSTRICTOR PHARYNGIS INFERIOR. SEEN FROM THE LEFT SIDE. (FIGURE 1318 SHOULD BE COMPARED WITH THIS FIGURE.)

¹ Quain speaks of the *tonsillitic branches* of the glossopharyngeal nerve. The adjectival form *tonsillar*, which is used by the same author of the arteries of the tonsil, is to be preferred, and is used in the text.

² *Ninth cranial nerve* in Soemmerring's enumeration; *first trunk* of the *eighth cranial nerve* in that of Willis.

³ See Appendix, note ⁴⁶².



¹ See note ² to p. 420. in Part IV.

² Formerly known also as the *gustatory nerve*.

³ *Twelfth cranial nerve* in Soemmerring's enumeration, *ninth* in that of Willis; also known as the *lingual motor nerve*.

FIG. 1325.—THE RAMIFICATION OF THE HYPOGLOSSAL NERVE, N. HYPOGLOSSUS (see note ³ above), AND THE LINGUAL NERVE, N. LINGUALIS (see note ² above), IN THE TONGUE, AND THE COMMUNICATIONS BETWEEN THESE TWO NERVES, SEEN OBLIQUELY FROM BELOW AND THE LEFT SIDE. THE ENTRANCE OF THE INTERNAL LARYNGEAL BRANCH OF THE SUPERIOR LARYNGEAL NERVE, RAMUS INTERNUS NERVI LARYNGEI SUPERIORIS, INTO THE INTERIOR OF THE LARYNX THROUGH THE THYROHYOID MEMBRANE, MEMBRANA HYOTHYREOIDEA.

SYSTEMA NERVORUM
SYMPATHICUM

THE
SYMPATHETIC NERVOUS SYSTEM

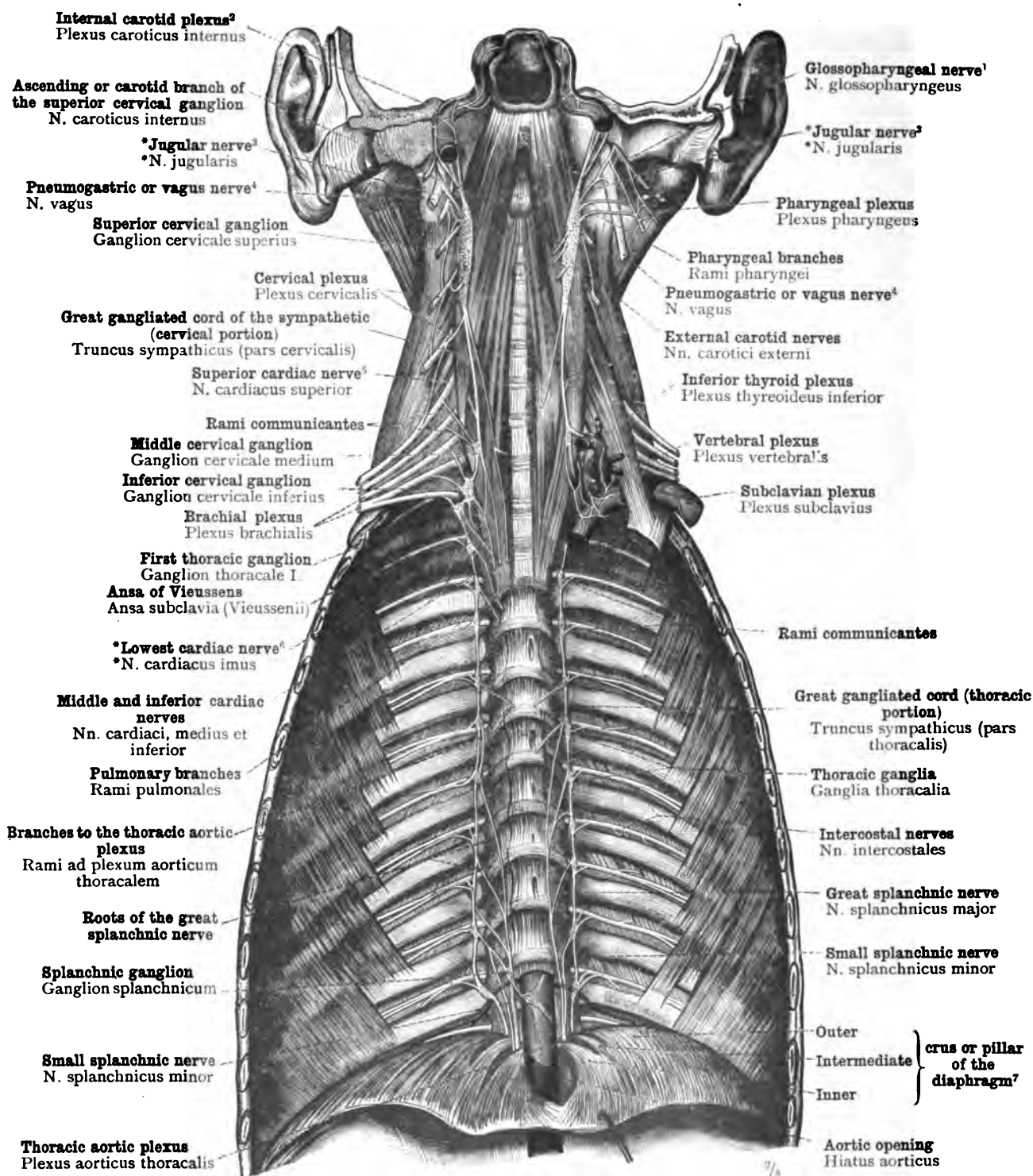


FIG. 1326.—CERVICAL PORTION, PARS CERVICALIS, AND THORACIC PORTION, PARS THORACALIS, OF THE GREAT GANGLIATED CORD OF THE SYMPATHETIC, WITH ITS GANGLIA (VERTEBRAL OR LATERAL GANGLIA OF GASKELL), GANGLIA TRUNCI SYMPATHICI; ITS CONTINUITY WITH THE INTERNAL CAROTID PLEXUS, PLEXUS CAROTICUS INTERNUS (see note ³ to p. 859), ITS COMMUNICATIONS WITH THE CEREBROSPINAL NERVES, AND ITS BRANCHES OF DISTRIBUTION. SEEN FROM BEFORE.

¹ Ninth cranial nerve in Soemmerring's enumeration; first trunk of the eighth cranial nerve in that of Willis.

² See note 3 to p. 859.

³ See Appendix, note 469.

⁴ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

⁵ Also known as the superficial cardiac nerve.

⁶ See Appendix, note 472.

⁷ See note 1 to p. 286, in Part III.

Truncus sympathicus—Great gangliated cord of the sympathetic.

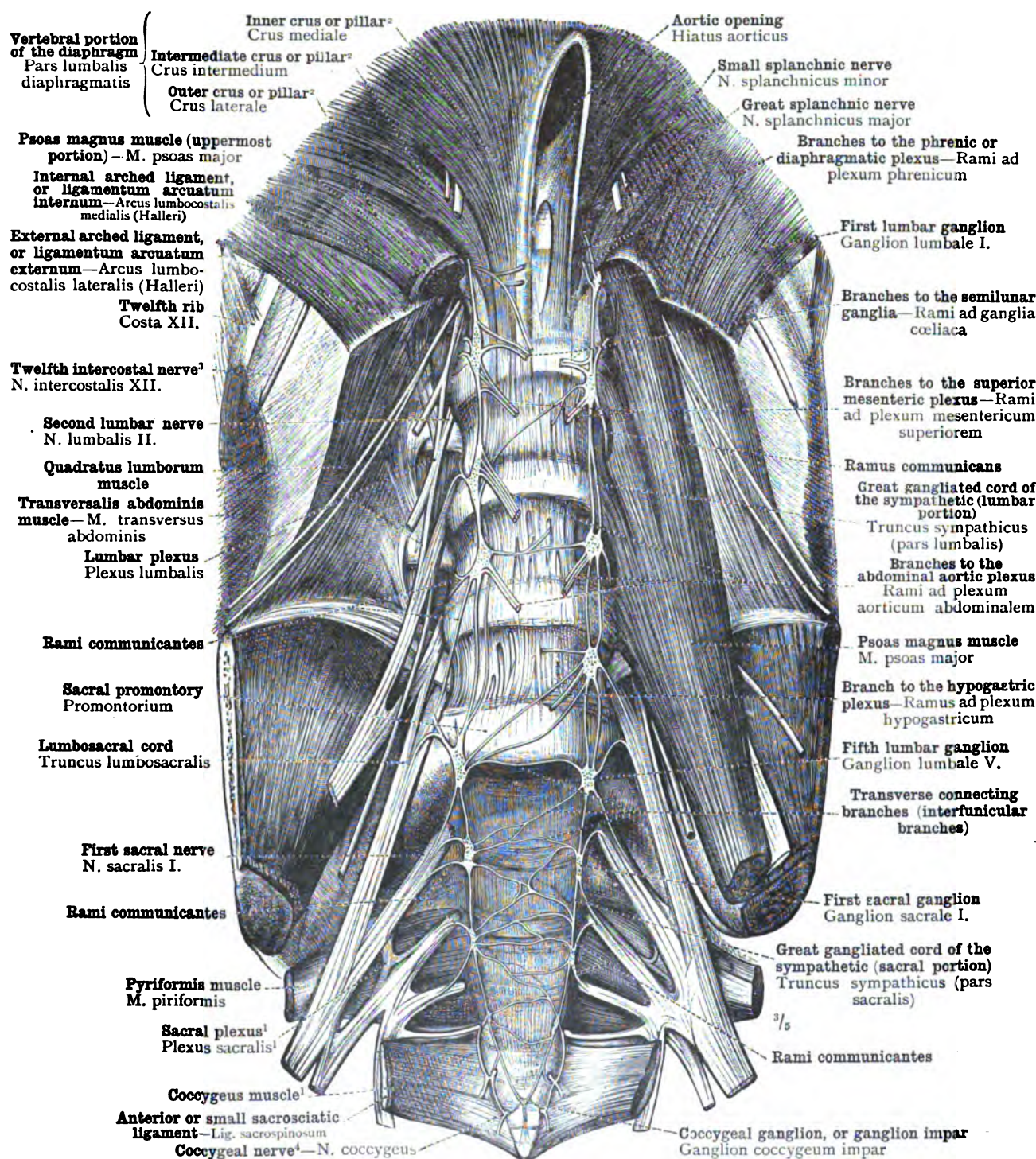


FIG. 1327.—LUMBAR PORTION, PARS LUMBALIS, AND SACRAL PORTION, PARS SACRALIS, OF THE GREAT GANGLIATED CORD OF THE SYMPATHETIC, WITH ITS GANGLIA (VERTEBRAL OR LATERAL GANGLIA OF GASKELL), GANGLIA TRUNCI SYMPATHICI; ITS COMMUNICATIONS WITH THE SPINAL NERVES, AND ITS BRANCHES OF DISTRIBUTION. SEEN FROM BEFORE.

On the right side of the body the psoas magnus muscle, musculus psoas major, has been removed, in order to lay bare the lumbar plexus, plexus lumbalis, and the rami communicantes of the lumbar portion of the great gangliated cord of the sympathetic.

¹ The nervous plexus denoted here by the term *plexus sacralis* is by some English authors called the *sciatic plexus*, the *sacral plexus* according to these anatomists comprising both the *plexus sacralis* and *plexus pudendus* of Todd. See Appendix, note 4th.

² See note ¹ to p. 286, in Part III.

³ Also known as the *subcostal nerve*.

⁴ See Appendix, note 4th.

Truncus sympathicus—Great gangliated cord of the sympathetic.

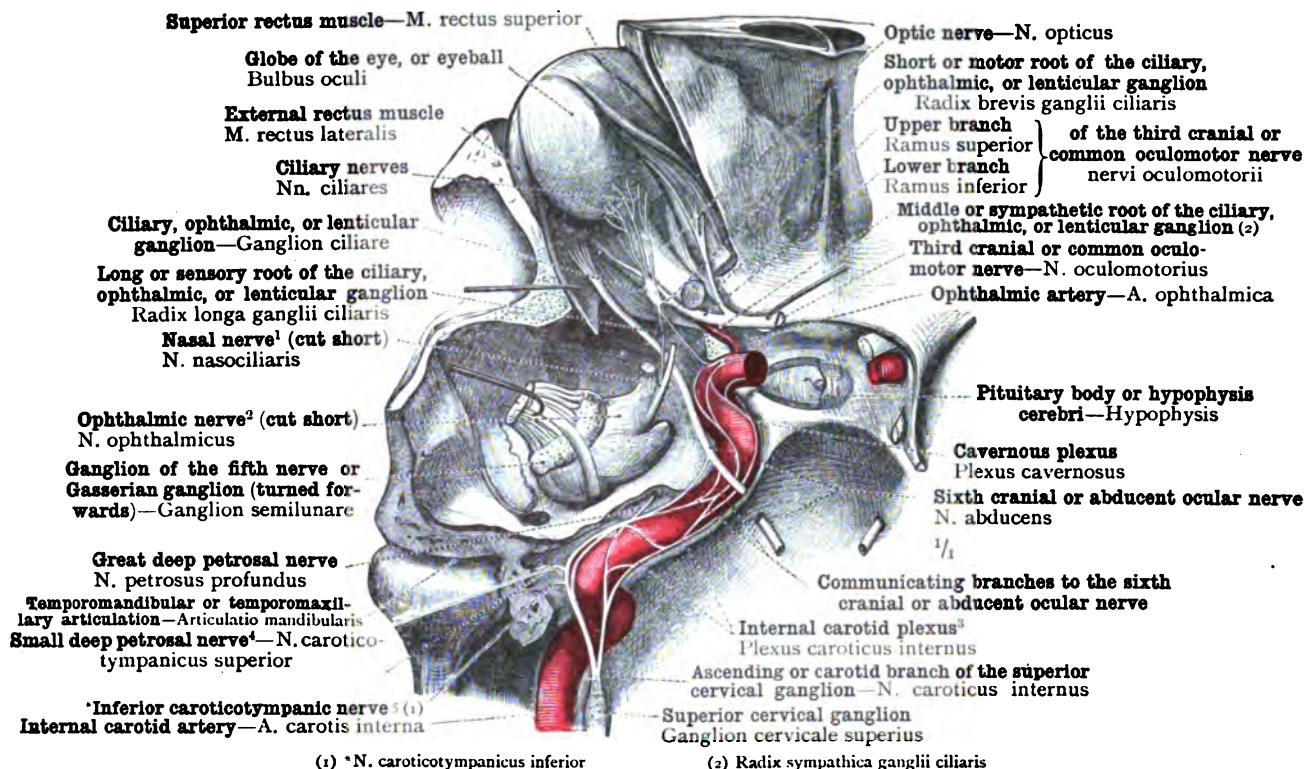


FIG. 1328.—THE CEPHALIC PORTION, PARS CEPHALICA, OF THE SYMPATHETIC NERVOUS SYSTEM. SEEN OBliquely FROM ABOVE AND BEHIND.

The carotid canal, canalis caroticus, and the cavernous sinus, sinus cavernosus, have been opened throughout, and the outer wall and also a part of the upper wall of the left orbit have been cut away. The ganglion of the fifth cranial nerve or Gasserian ganglion, ganglion semilunare (Gasseri), has been turned forwards.

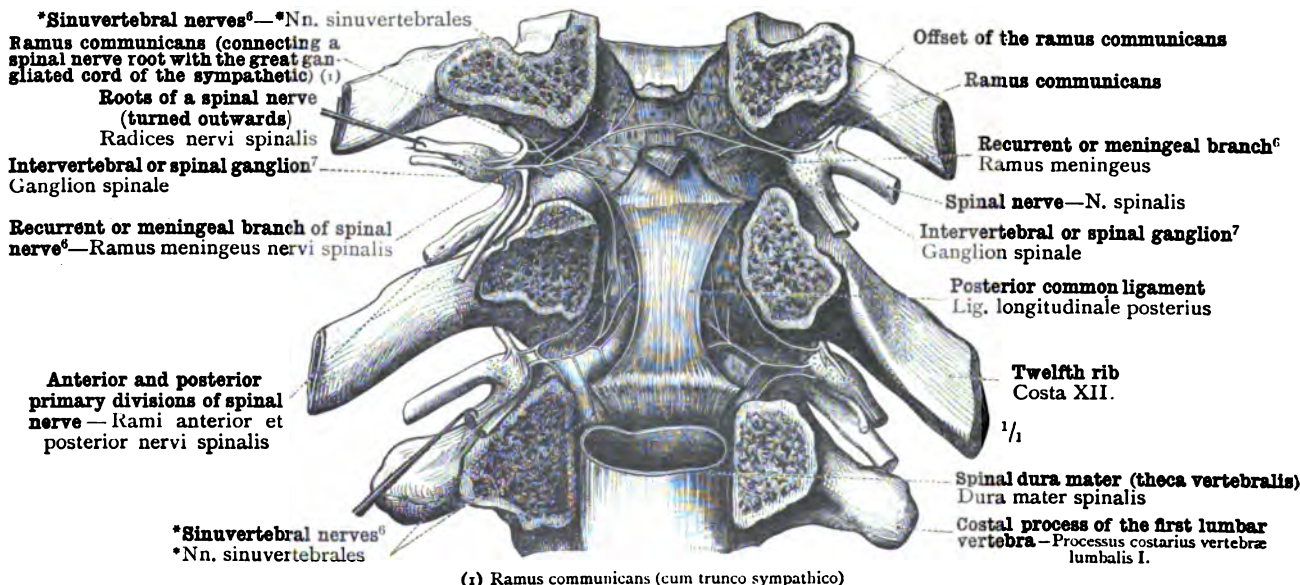


FIG. 1329.—THE NERVES OF THE SPINAL OR NEURAL CANAL (INTRASPINAL NERVES, *SINUVERTEBRAL NERVES, *NERVI SINUVERTEBRALES—see Appendix, note 473), AS SEEN ON THE POSTERIOR SURFACE OF THE BODIES OF THE ELEVENTH AND TWELFTH DORSAL VERTEBRÆ WHEN THE NEURAL ARCHES HAVE BEEN CUT AWAY AND THE SPINAL CORD REMOVED FROM BEHIND.

The roots of the spinal nerves with the intervertebral or spinal ganglia (ganglia of the posterior root) have been turned outwards.

1 Also known as the *oculonasal* and as the *nasociliary* nerve.

2 Or first division of the *fifth cranial, trifacial, or trigeminal* nerve.

3 See Appendix, notes 432 and 434.

4 Also called the *ganglion of the posterior root*.

5 See note 3 to p. 850.

6 See Appendix, note 473.

Pars cephalica systematis sympathici—The cephalic portion of the sympathetic nervous system.—***Nervi sinuvertebrales**—The **sinuvertebral* (intraspinal) nerves.

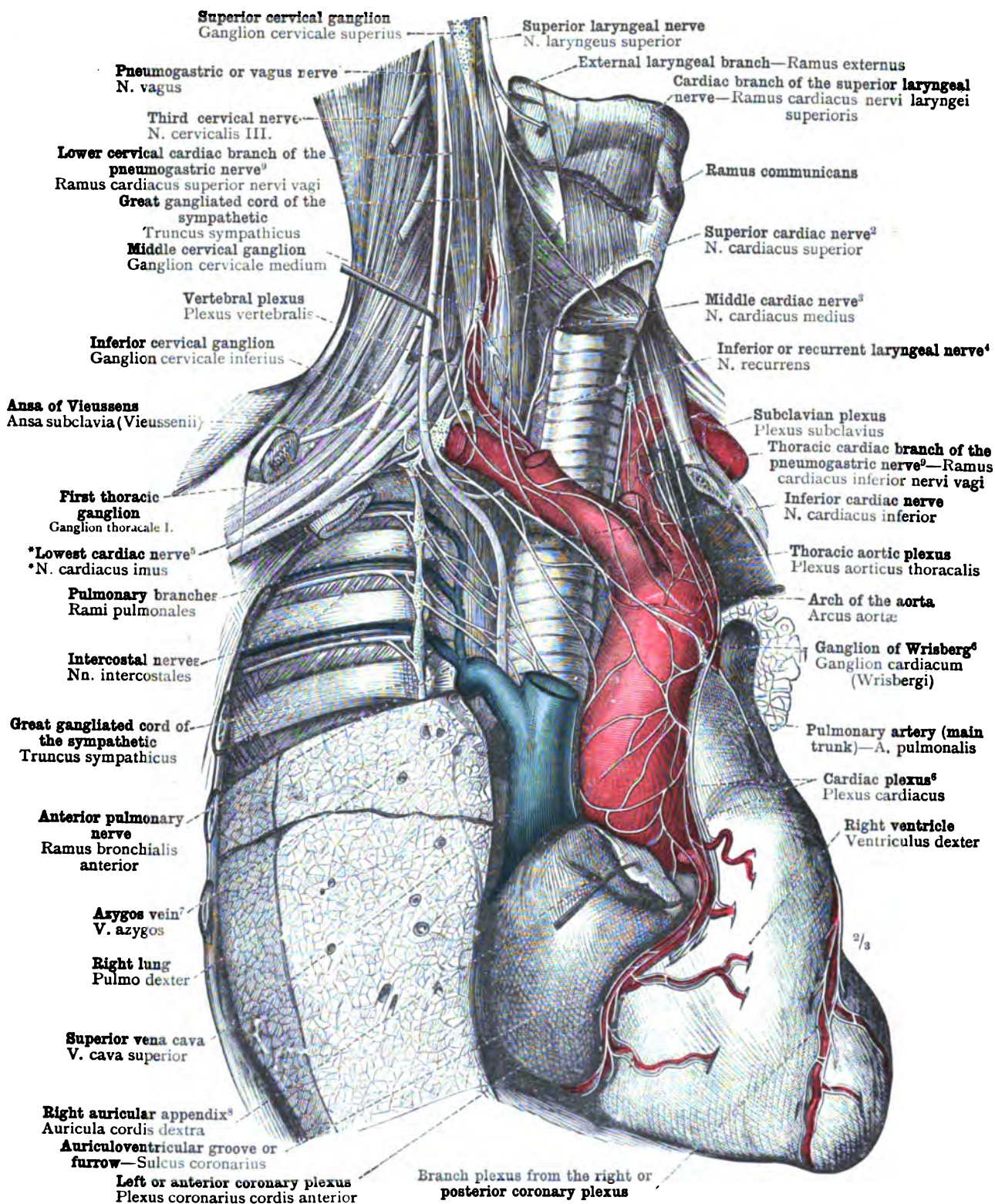


FIG. 1330.—THE CARDIAC NERVES, NN. CARDIACI, AND THE CARDIAC PLEXUS, PLEXUS CARDIACUS (see Appendix, note ⁴¹), SEEN FROM THE RIGHT SIDE.

The anterior and upper portions of the right lung have been cut away.

¹ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

² Also known as the superficial cardiac nerve.

³ Also known as the deep or great cardiac nerve.

⁴ See Appendix, note 4-2.

⁵ See Appendix, note 4-2.

⁶ See Appendix, note 471.

⁷ Also called the right or large azygos vein.

⁸ See Appendix to Part V., note 113.

⁹ See Appendix, note 422.

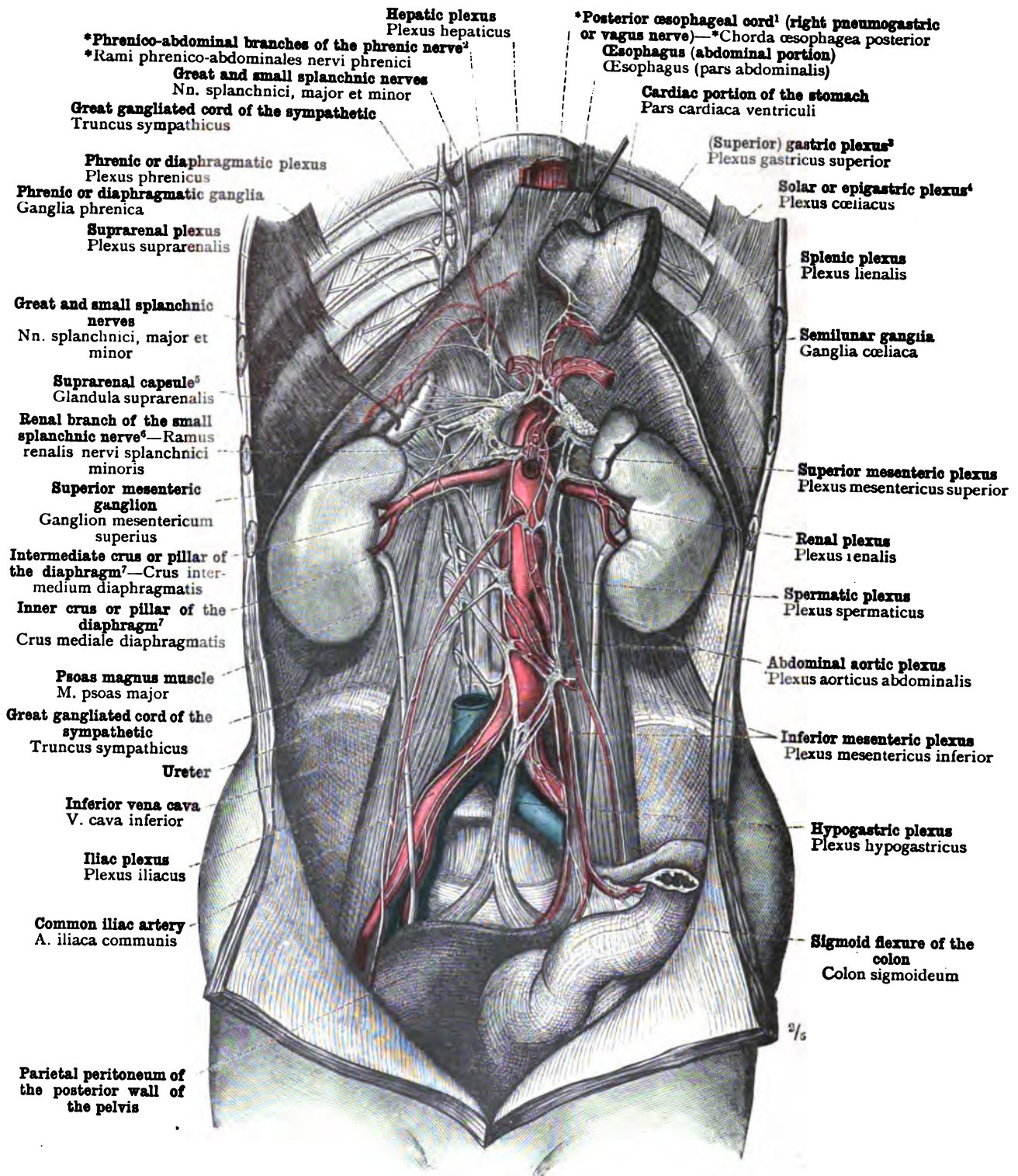


FIG. 1331.—THE GANGLIA OF THE PLEXUSES OF THE SYMPATHETIC (PREVERTEBRAL OR COLLATERAL GANGLIA OF GASKELL), GANGLIA PLEXUUM SYMPATHICORUM, AND THE FORMATION OF THE PLEXUSES OF THE SYMPATHETIC, PLEXUS SYMPATHICI, IN THE RETROPERITONEAL SPACE. SEEN FROM BEFORE.

¹ See Appendix, note 464.

² See Appendix, note 474.

³ See Appendix, note 465.

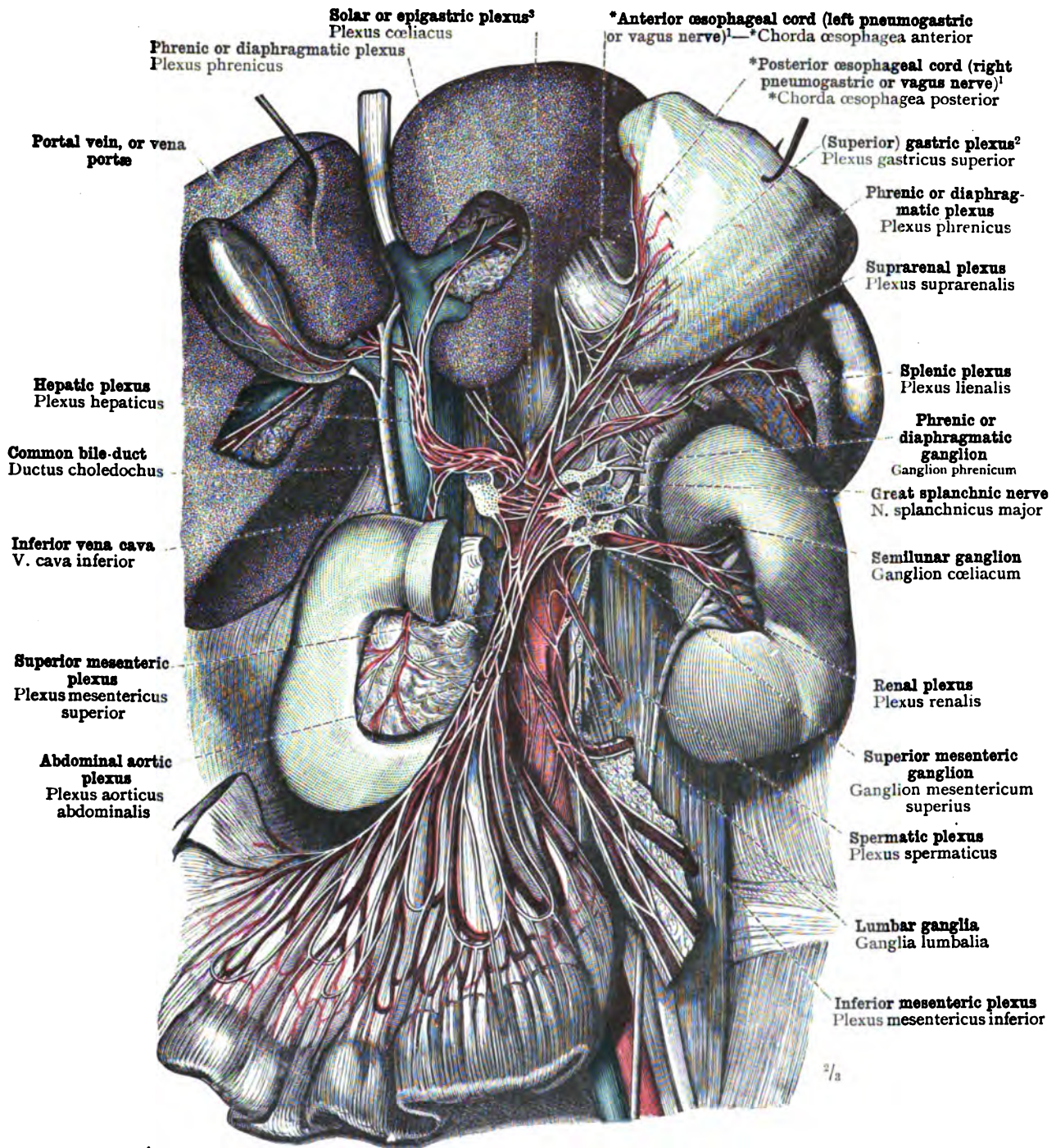
⁴ See Appendix, note 474.

⁵ Called also *suprarenal body*, or *adrenal*.

⁶ See Appendix, note 475.

⁷ See note ¹ to p. 286, in Part III.

Pars abdominalis systematis sympathici—Abdominal portion of the sympathetic nervous system.



¹ See Appendix, note 464.

² See Appendix, note 465.

³ See Appendix, note 474.

FIG. 1332.—THE SEMILUNAR GANGLIA, GANGLIA CÆLIACA, WITH THE SYMPATHETIC PLEXUSES, PLEXUS SYMPATHICI, OF THE ABDOMINAL VISCERA, RADIATING FROM THESE GANGLIA.

The uppermost portion only of the stomach has been retained, in connexion with the œsophagus, and this portion, together with the liver, has been turned upwards. The pancreas was cut across at the junction of the head and the body (*i.e.*, the neck of the organ, according to English writers—see Fig. 720, p. 441, in Part IV.), and the body of the gland was removed. The arteries and nerves of the mesentery have been exposed by the removal of the peritoneum covering them.

Pars abdominalis systematis sympathici—Abdominal portion of the sympathetic nervous system.

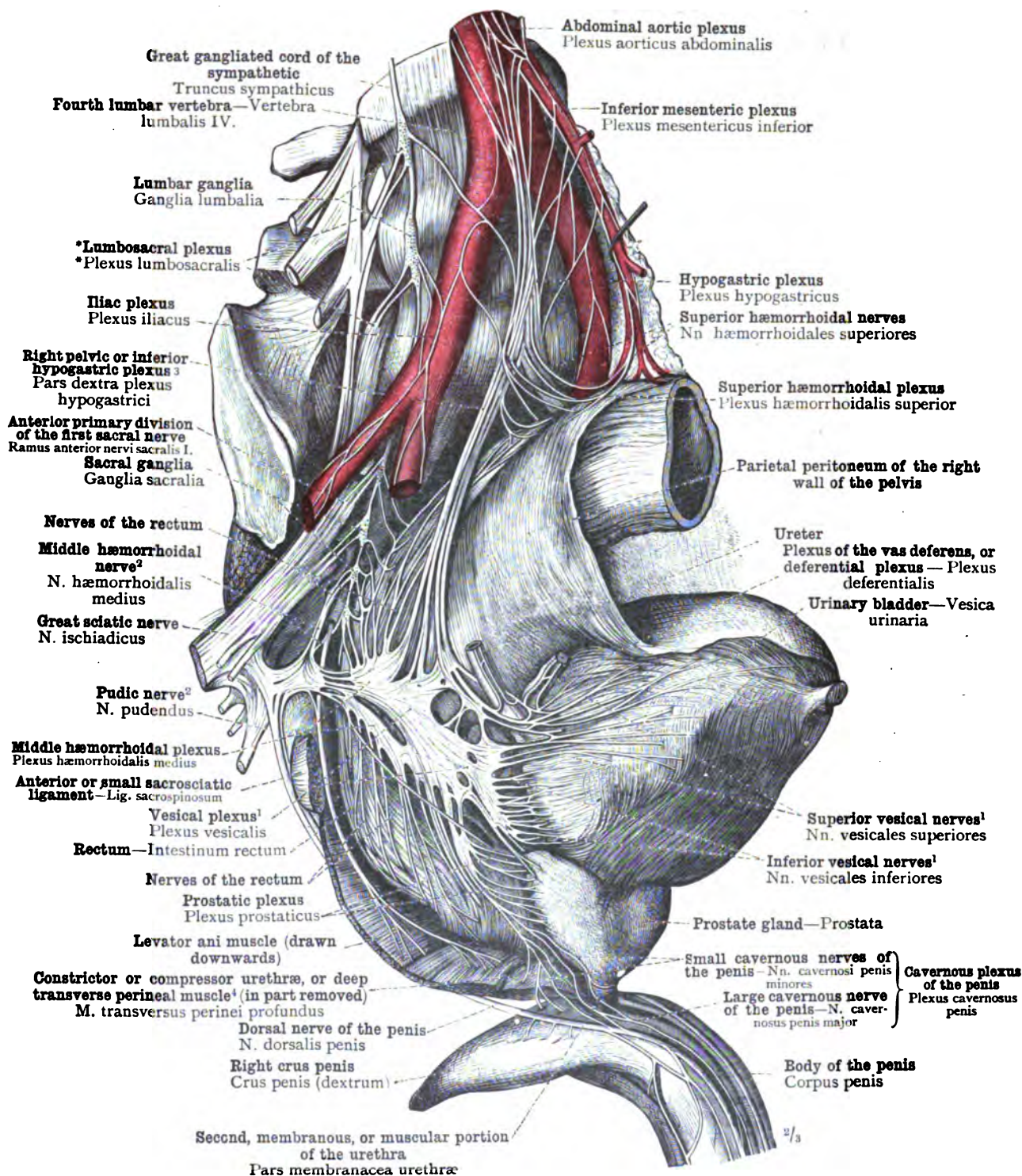
¹ See Appendix, note 476.² See Appendix, note 438.³ See Appendix, note 477.⁴ See note 1 to p. 527, in Part IV.

FIG. 1333.—THE HYPogastric AND PELVIC PLEXUSES, PLEXUS HYPogastricus (see Appendix, note 477), THE PARENT PLEXUSES FROM WHICH THE SYMPATHETIC PLEXUSES OF THE PELVIC VISCERA ARE DERIVED, AND THE SHARE TAKEN BY THE SACRAL PORTION OF THE GREAT SYMPATHETIC CORD IN THEIR FORMATION. THE PUDIC PLEXUS, PLEXUS PUDENDUS (see Appendix, note 438).

Pars pelvina systematis sympathici—Pelvic portion of the sympathetic nervous system.

ORGANA SENSUUM
THE ORGANS OF THE SENSES

ORGANON VISUS

THE EYE

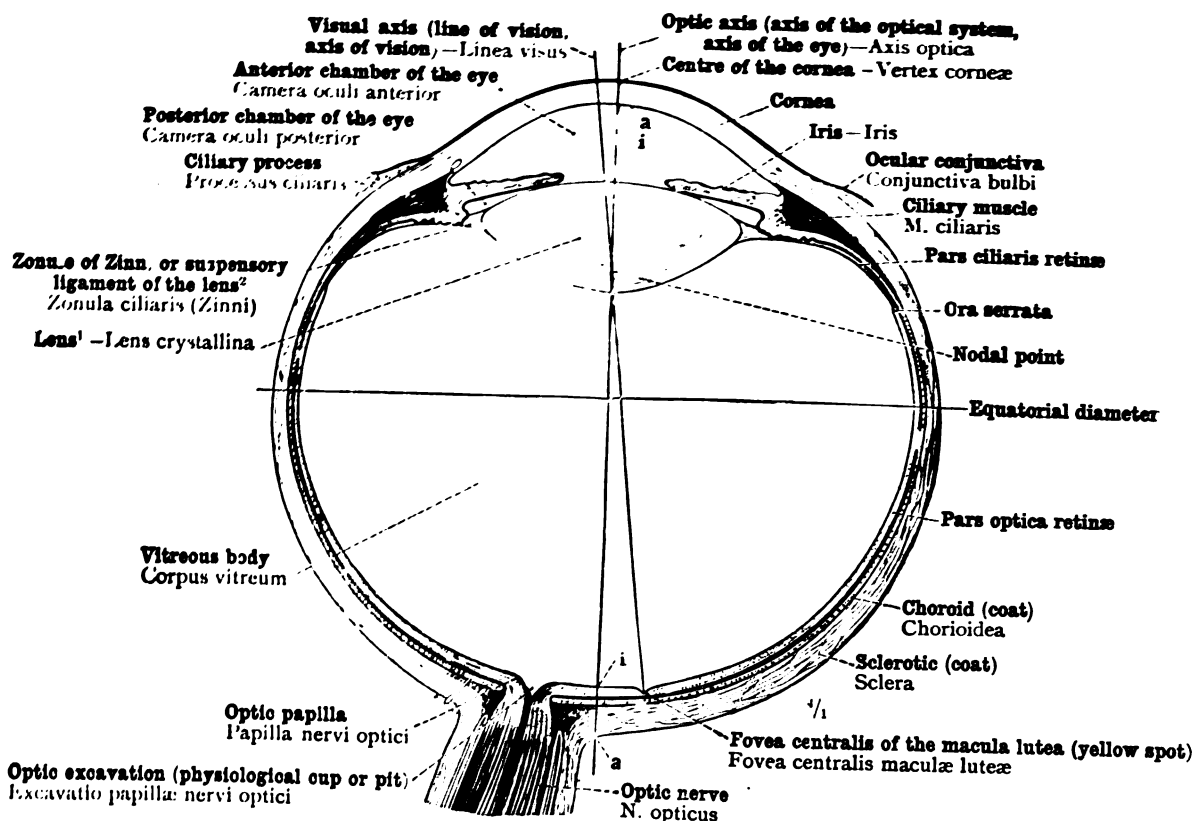


FIG. 1334.—DIAGRAM OF A HORIZONTAL SECTION OF THE RIGHT EYE. VISUAL AXIS, *LINEA VISUS*; OPTIC AXIS, *AXIS OPTICA*; aa, EXTERNAL AXIS OF THE EYE, *AXIS OCULI EXTERNA*; ii, INTERNAL AXIS OF THE EYE, *AXIS OCULI INTERNA*.

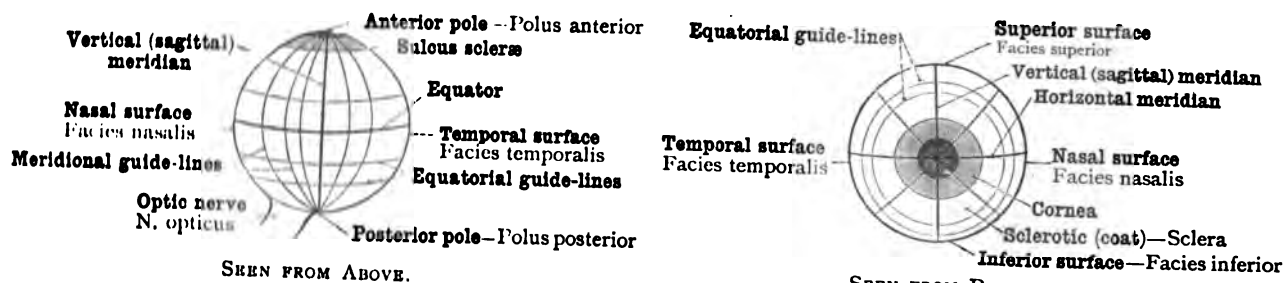


FIG. 1335.—TERMS COMMONLY EMPLOYED IN THE ORIENTATION OF THE EYEBALL. RIGHT EYE.

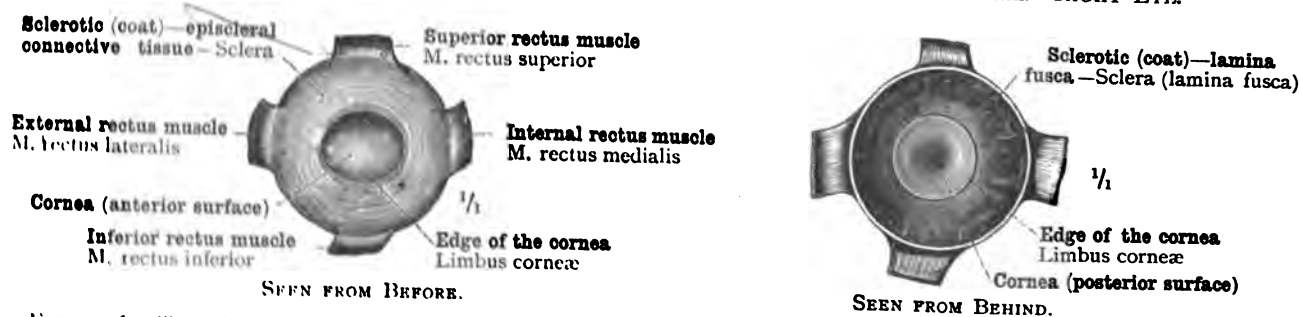


FIG. 1336. THE ANTERIOR HEMISPHERE OF THE EXTERNAL FIBROUS COAT OF THE EYEBALL, *TUNICA FIBROSA OCULI*, CONSISTING OF TWO PARTS: THE SCLEROTIC (COAT), (*TUNICA*) *SCLERA*, AND THE CORNEA.

¹ In full known as the *crystalline lens*, but more commonly spoken of as the *lens* without the qualifying adjective.

² See Appendix, note 489.

Bulbus oculi—The globe of the eye, or eyeball.—**Tunica fibrosa oculi**—The external fibrous coat of the eyeball.

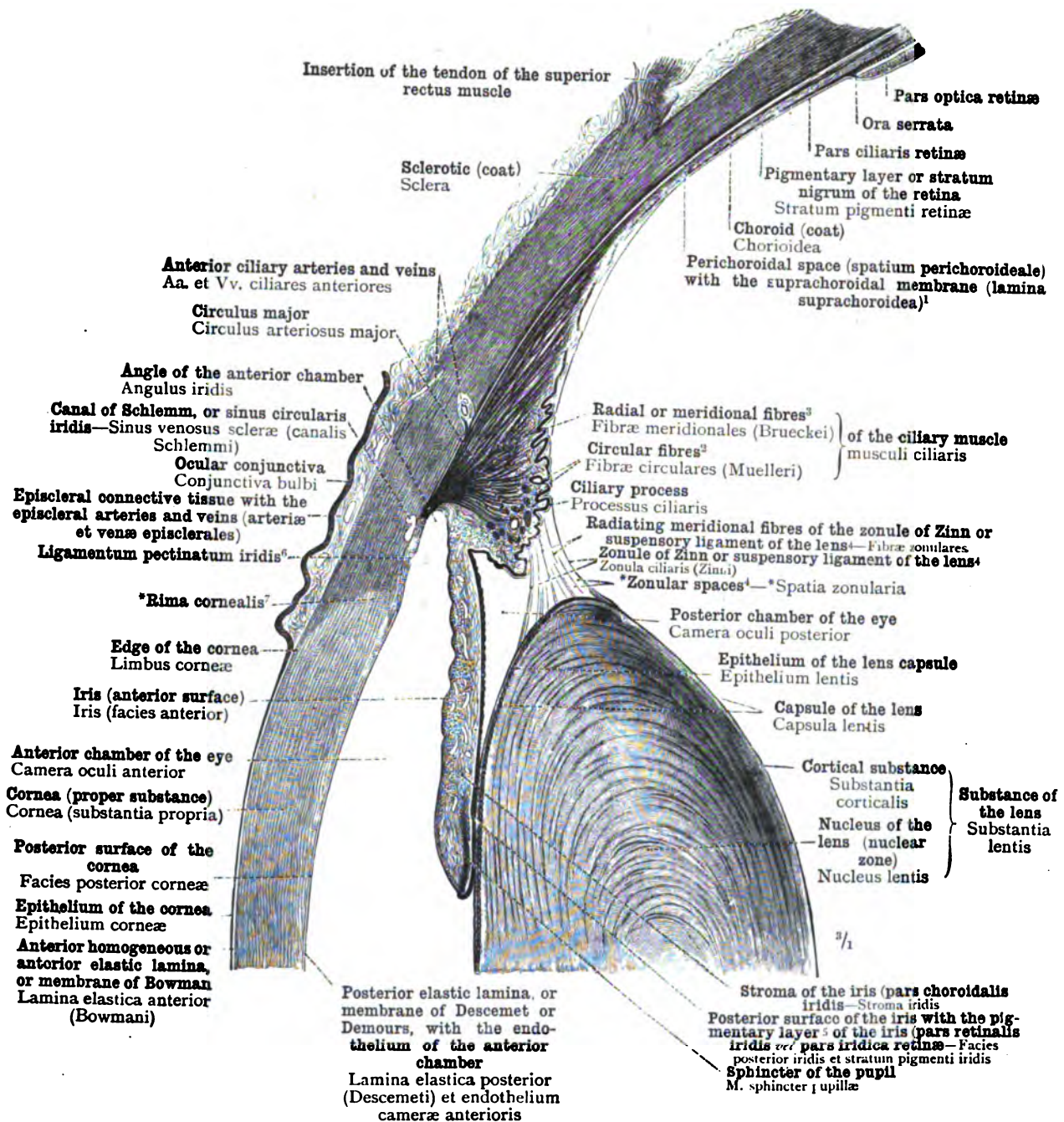


FIG. 1337.—THE UPPER HALF OF A SAGITTAL SECTION THROUGH THE FRONT OF THE EYEBALL. THE LAYERS OF THE THREE COATS OF THE EYEBALL; THE ANTERIOR AND POSTERIOR CHAMBERS, CAMERA OCULI ANTERIOR ET CAMERA OCULI POSTERIOR. THE RELATIONS OF THE LENS, LENS CRYSTALLINA, TO THE CILIARY BODY, CORPUS CILIARE, AND TO THE IRIS. THE CILIARY MUSCLE, M. CILIARIS, AND THE ZONULE OF ZINN OR SUSPENSORY LIGAMENT OF THE LENS, ZONULA CILIARIS ZINNI (see Appendix, note 480).

¹ See Appendix, note 478.

² See Appendix, note 479.

³ Constituting what is sometimes called the radial ciliary muscle (Macalister, *op. cit.*, p. 670).

⁴ See Appendix, note 480.

⁵ Also called the vocal pigment of the iris.

⁶ Sometimes called the pillars of the iris.

⁷ See Appendix, note 481.

Sagittal Section of the Eyeball.

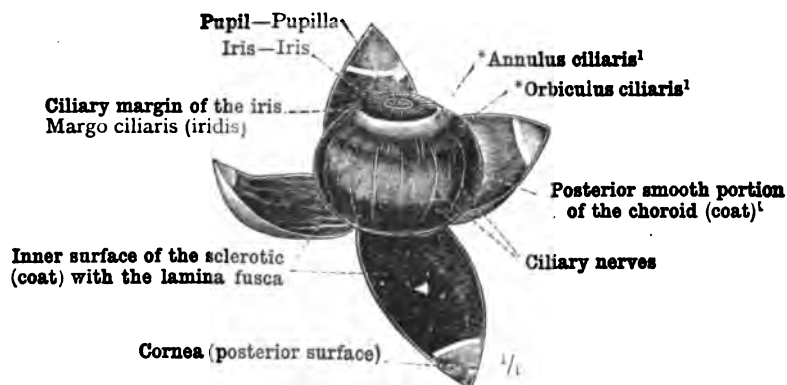


FIG. 1338.—THE MIDDLE OR VASCULAR COAT OF THE EYEBALL, *TUNICA UVEA SEU VASCULOSA OCULI*, EXPOSED FROM WITHOUT; ITS TWO PORTIONS, THE IRIS AND THE CHOROID (COAT), *CHORIOIDEA*. LEFT EYE, SEEN OBLIQUELY FROM ABOVE AND BEFORE.

The external coat of the eyeball was divided into four segments by meridional incisions extending backwards as far as the entrance of the optic nerve into the globe, and these segments were turned backwards.

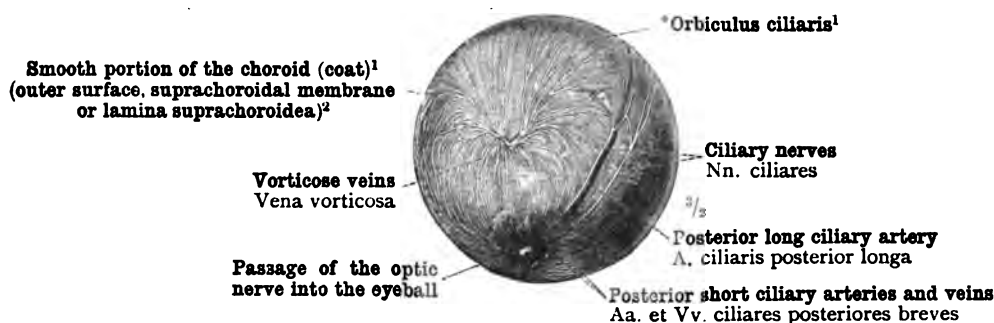


FIG. 1339.—THE POSTERIOR PORTION OF THE CHOROID (COAT), DISPLAYED FROM WITHOUT BY THE COMPLETE REMOVAL OF THE EXTERNAL COAT OF THE EYEBALL. RIGHT EYE, SEEN FROM ABOVE AND BEHIND, WITH THE TEMPORAL SURFACE OF THE EYEBALL ROTATED A LITTLE UPWARDS.

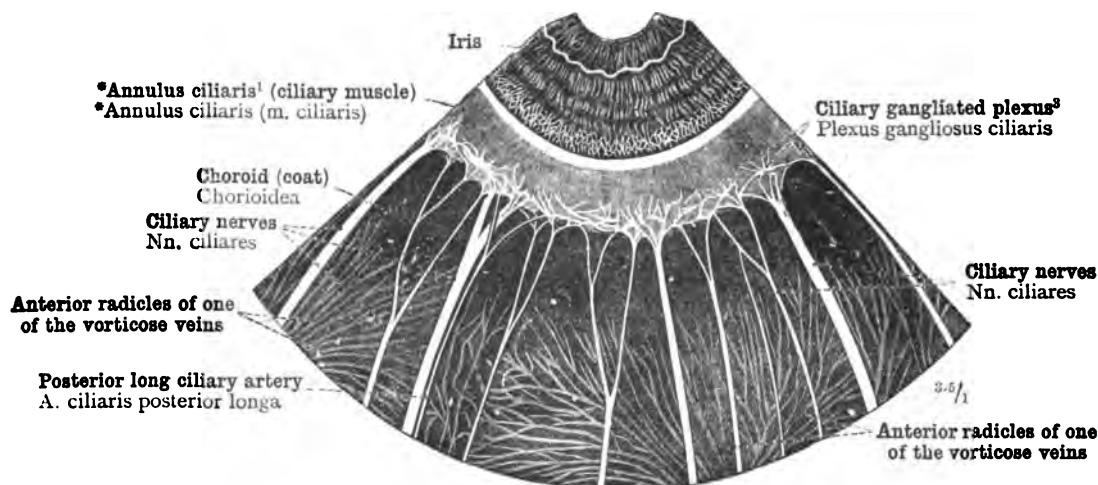


FIG. 1340.—THE CILIARY GANGLIATED PLEXUS (see Appendix, note 483), PLEXUS GANGLIOSUS CILIARIS, AND THE CILIARY NERVES ENTERING THIS PLEXUS. OUTER SURFACE OF THE MIDDLE OR VASCULAR COAT OF THE EYEBALL.

¹ See Appendix, note 482.

² See Appendix, note 478.

³ See Appendix, note 483.

Tunica vasculosa seu uvea oculi—The middle or vascular coat of the eyeball.

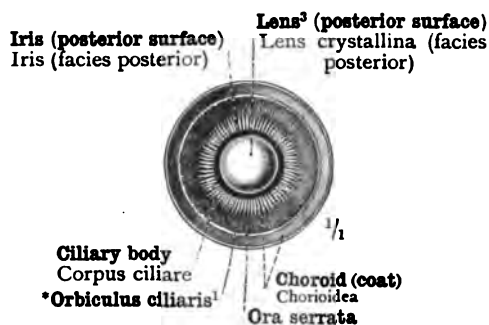


FIG. 1341.—THE INNER SURFACE OF THE ANTERIOR PORTION OF THE CHOROID (COAT), WITH THE LENS. THE CORONA CILIARIS (see Appendix, note 486). SEEN FROM BEHIND.

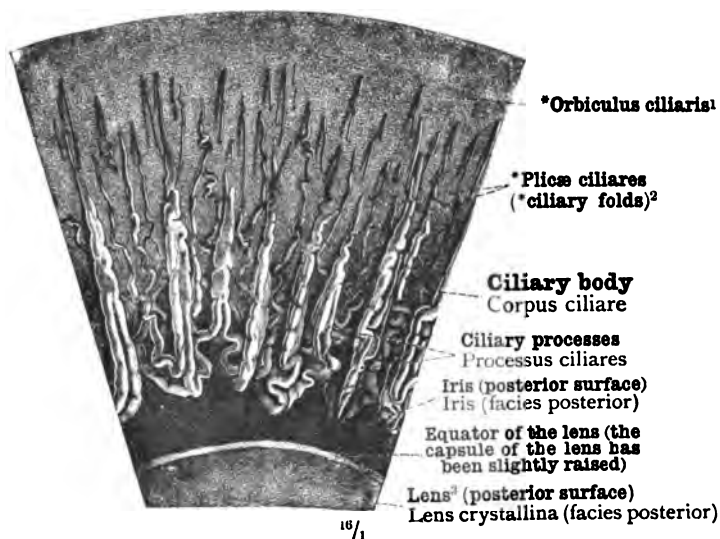


FIG. 1342.—A PORTION OF THE CORONA CILIARIS (see Appendix, note 486), MAGNIFIED. THE CILIARY PROCESSES, PROCESSUS CILIARES, AND THE *CILIARY FOLDS, *PLICÆ CILIARES (see Appendix, note 486).

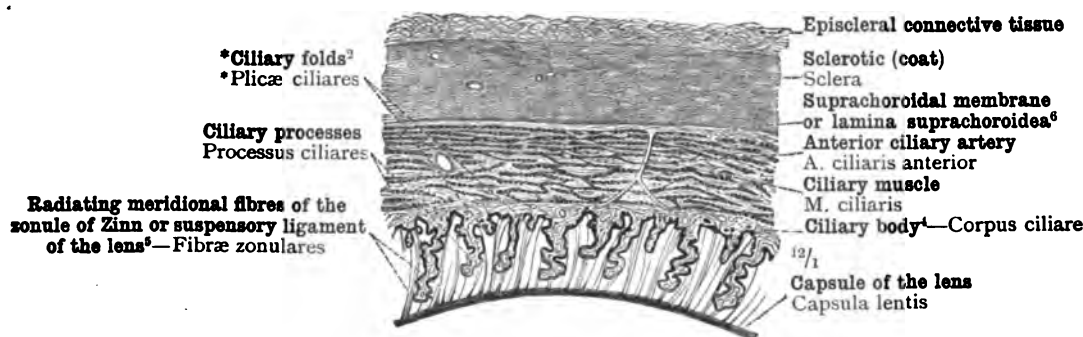


FIG. 1343.—A PORTION OF A CORONAL SECTION THROUGH THE CILIARY BODY, CORPUS CILIARE, AND THE SCLEROTIC (COAT), SCLERA. THE CILIARY PROCESSES AND THE LAYERS OF THE CILIARY MUSCLE, M. CILIARIS, ARE SEEN IN TRANSVERSE SECTION. THE CAPSULE OF THE LENS, WHICH IS ALSO SEEN IN THE SECTION, IS CONNECTED WITH THE CILIARY BODY BY MEANS OF THE FIBRÆ ZONULARES (RADIATING MERIDIONAL FIBRES OF THE ZONULE OF ZINN OR SUSPENSORY LIGAMENT OF THE LENS—see Appendix, note 490).

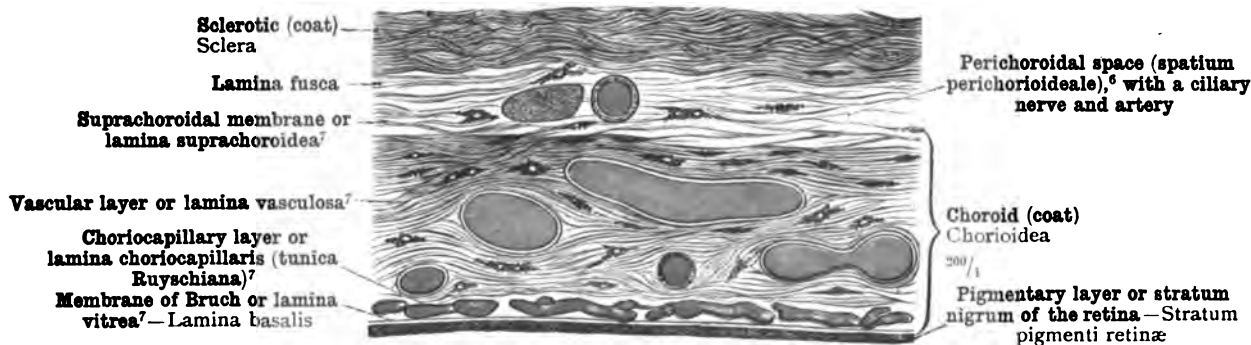


FIG. 1344.—THE LAYERS OF THE CHOROID (COAT), AS SEEN IN A CORONAL SECTION THROUGH THE POSTERIOR SMOOTH PORTION (see Appendix, note 482) OF THAT TUNIC (see Appendix, note 486). IN THE PERICHOROIDAL SPACE, SPATIUM PERICHORIOIDEALE (see Appendix, note 478), A CILIARY ARTERY, A. CILIARIS, AND A CILIARY NERVE, N. CILIARIS, ARE SEEN IN TRANSVERSE SECTION.

¹ See Appendix, note 482.
⁵ See Appendix, note 480.

² See Appendix, note 484.
⁶ See Appendix, note 478.

³ See note ¹ to p. 892.
⁷ See Appendix, note 486.

⁴ See Appendix, note 495.

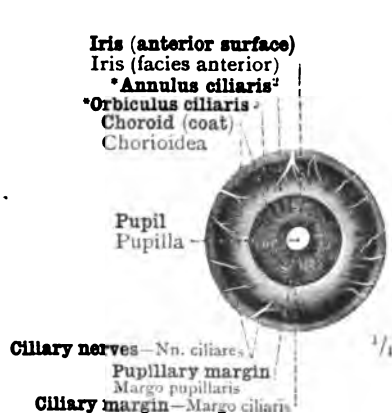


FIG. 1345.—THE IRIS OF A DARK BROWN EYE, WITH THE ADJOINING PORTIONS OF THE CHOROID (COAT). SEEN FROM BEFORE.

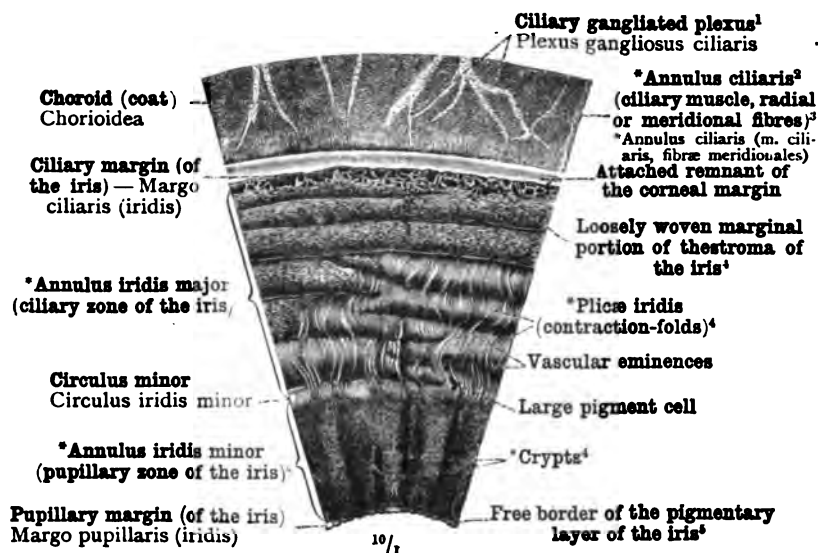


FIG. 1346.—A SECTOR OF THE IRIS DEPICTED IN FIG. 1345, MAGNIFIED. ANTERIOR SURFACE.



FIG. 1347.—THE IRIS OF A LIGHT GREY EYE, WITH THE ADJOINING PORTIONS OF THE CHOROID (COAT). SEEN FROM BEFORE.

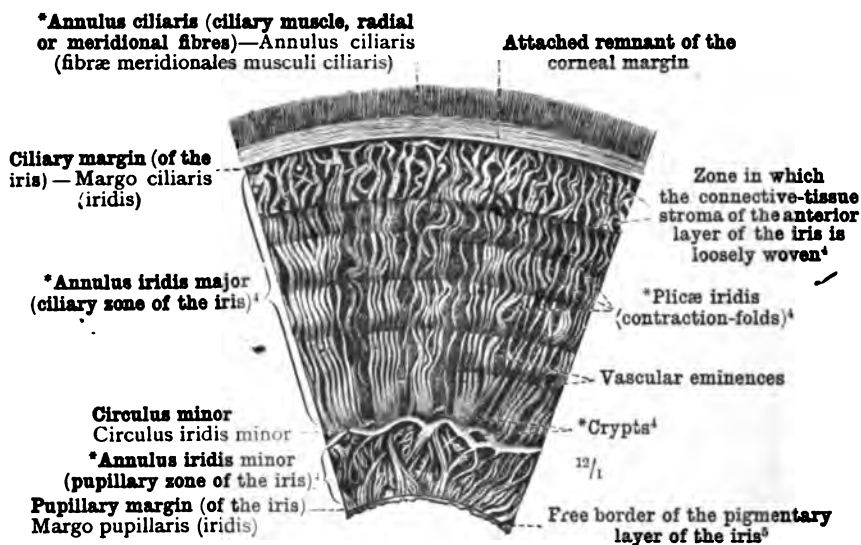


FIG. 1348.—A SECTOR OF THE IRIS DEPICTED IN FIG. 1347. ANTERIOR SURFACE.

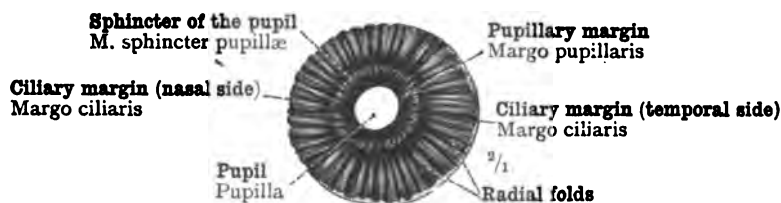


FIG. 1349.—THE POSTERIOR SURFACE, FACIES POSTERIOR, OF THE EXCISED IRIS OF A LIGHT GREY RIGHT EYE, AS SEEN WHEN THE PIGMENTARY LAYER (STRATUM PIGMENTI IRIDIS—see Appendix, note 488) HAS BEEN COMPLETELY REMOVED. THE PUPIL, PUPILLA, IS NOT PRECISELY CENTRAL IN POSITION, BUT LIES A LITTLE TO THE NASAL SIDE AND ABOVE THE MIDDLE.

¹ See Appendix, note 482.

² See Appendix, note 482.

³ See note 3 to p. 893.

⁴ See Appendix, note 487.

⁵ See Appendix, note 488.

Tunica vasculosa *seu* uvea oculi—The middle or vascular coat of the eyeball.

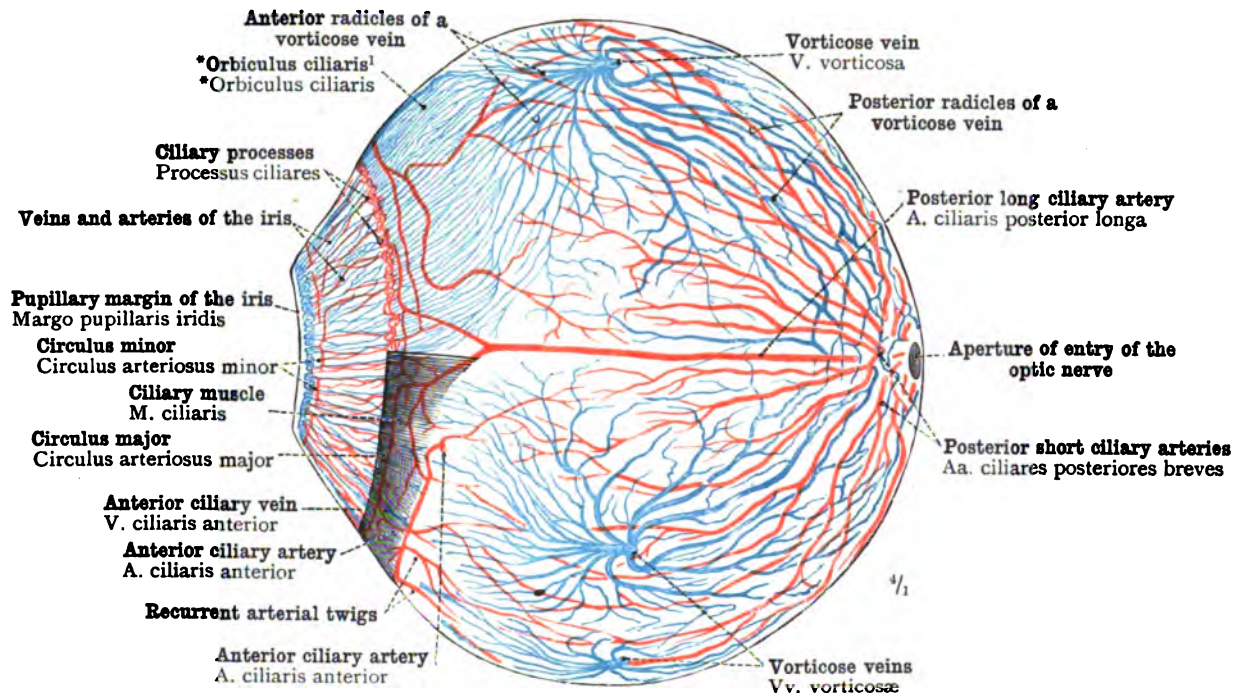


FIG. 1350.—DIAGRAMMATIC REPRESENTATION OF THE ARRANGEMENT OF THE BLOODVESSELS IN THE MIDDLE OR VASCULAR COAT OF THE EYEBALL. AFTER TH. LEBER. SEEN FROM THE OUTER SURFACE.

In the upper half of the preparation the ciliary muscle, musculus ciliaris, has been removed, so as to display the vessels of the ciliary processes.

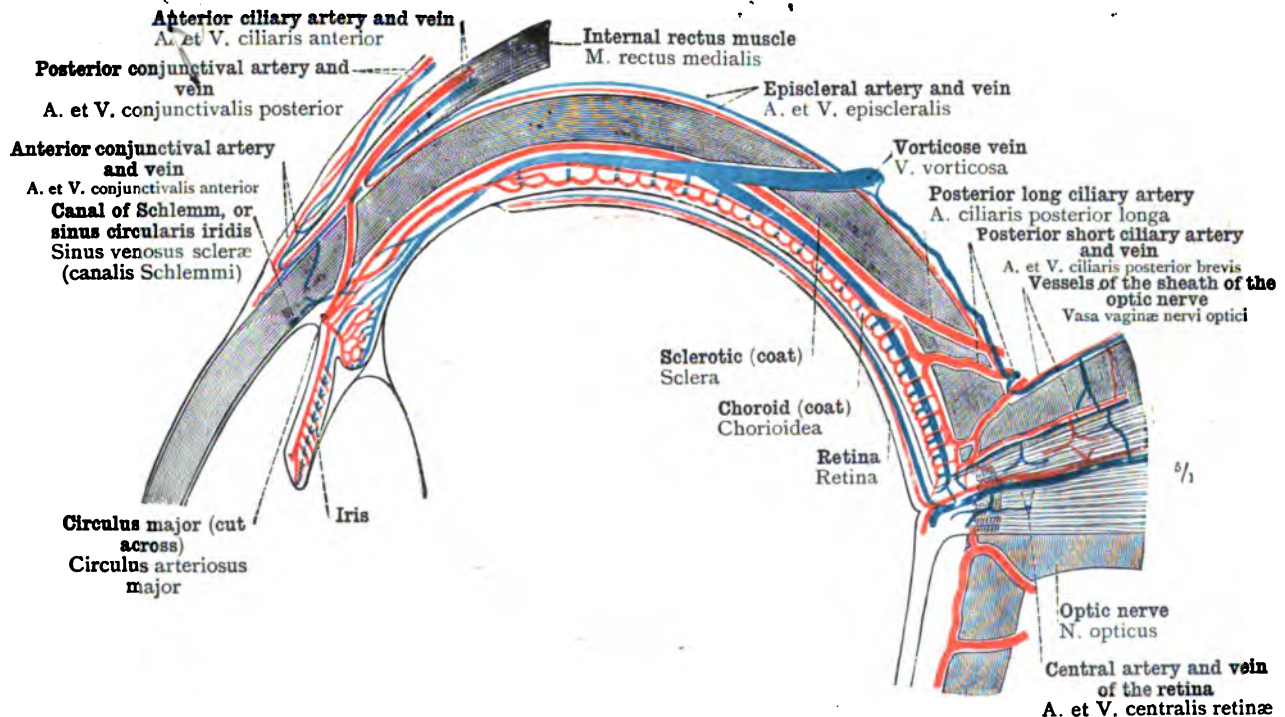


FIG. 1351.—DIAGRAMMATIC REPRESENTATION OF THE COURSE OF THE BLOODVESSELS IN THE EYEBALL. HORIZONTAL SECTION. AFTER TH. LEBER.

¹ See Appendix, note 4²².

Bloodvessels of the Eyeball.

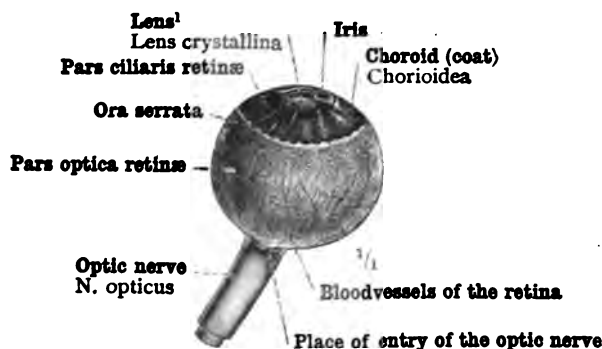


FIG. 1352.—THE INTERNAL COAT OF THE EYEBALL, THE RETINA, IN CONNEXION WITH THE OPTIC NERVE, EXPOSED BY THE REMOVAL OF THE EXTERNAL AND MIDDLE COAT. ITS TWO PARTS, PARS OPTICA AND PARS CILIARIS, WITH THE ORA SERRATA AS THE BOUNDARY BETWEEN THEM. EXTERNAL SURFACE. RIGHT EYE, SEEN FROM ABOVE.

A part of the iris and a part of the ciliary body have been preserved.

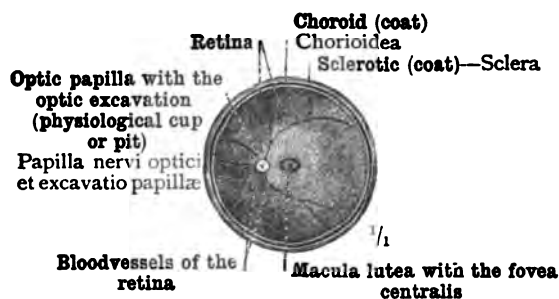
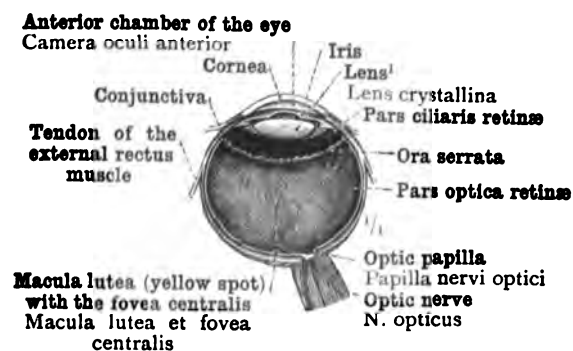


FIG. 1353.—THE RETINA IN CONNEXION WITH THE OPTIC NERVE, EXPOSED IN THE HORIZONTALLY HEMI-SECTED LEFT EYEBALL BY THE REMOVAL OF THE VITREOUS BODY. LOWER HALF OF THE EYEBALL. THE INTERIOR, SEEN FROM ABOVE.

FIG. 1354.—THE POSTERIOR PORTION OF THE RETINA WITH THE OPTIC PAPILLA, PAPILLA NERVI OPTICI, AND THE YELLOW SPOT, MACULA LUTEA, AS SEEN IN A CORONALLY HEMI-SECTED LEFT EYEBALL. THE INTERIOR, SEEN FROM BEFORE.

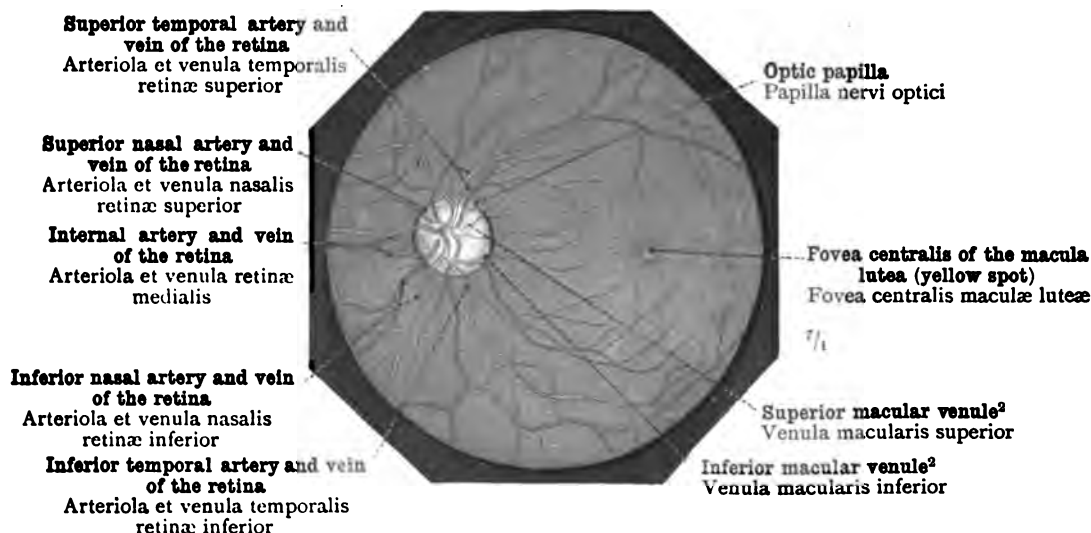


FIG. 1355.—THE FUNDUS OF THE EYEBALL WITH THE BLOODVESSELS OF THE RETINA, AS SEEN IN THE NORMAL LEFT EYE OF A DARK-HAIRED YOUNG MAN. ERECT IMAGE. AFTER E. V. JÄGER.

¹ See note ¹ to p. 892.

² See Appendix, note 489.

The Internal Coat of the Eye, or Retina.

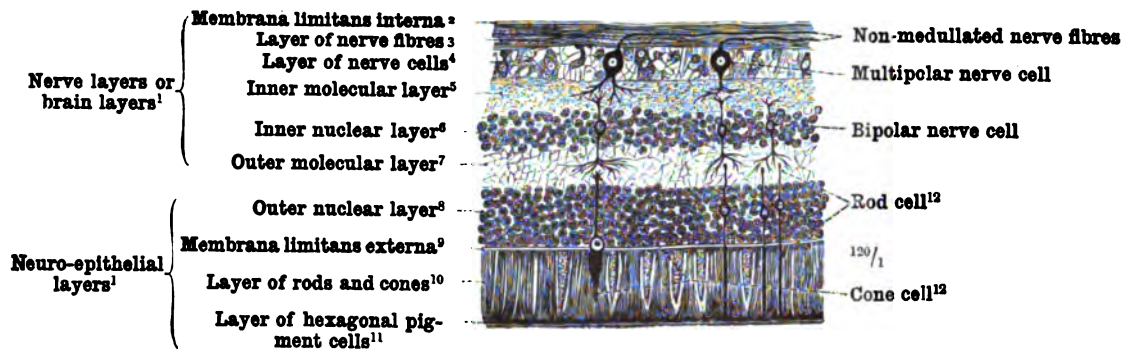


FIG. 1356.—THE LAYERS OF THE RETINA (see notes ¹ to ¹² inclusive), AS SEEN IN A SAGITTAL SECTION THE ARRANGEMENT OF THE ELEMENTARY PARTS IS REPRESENTED DIAGMATICALLY.

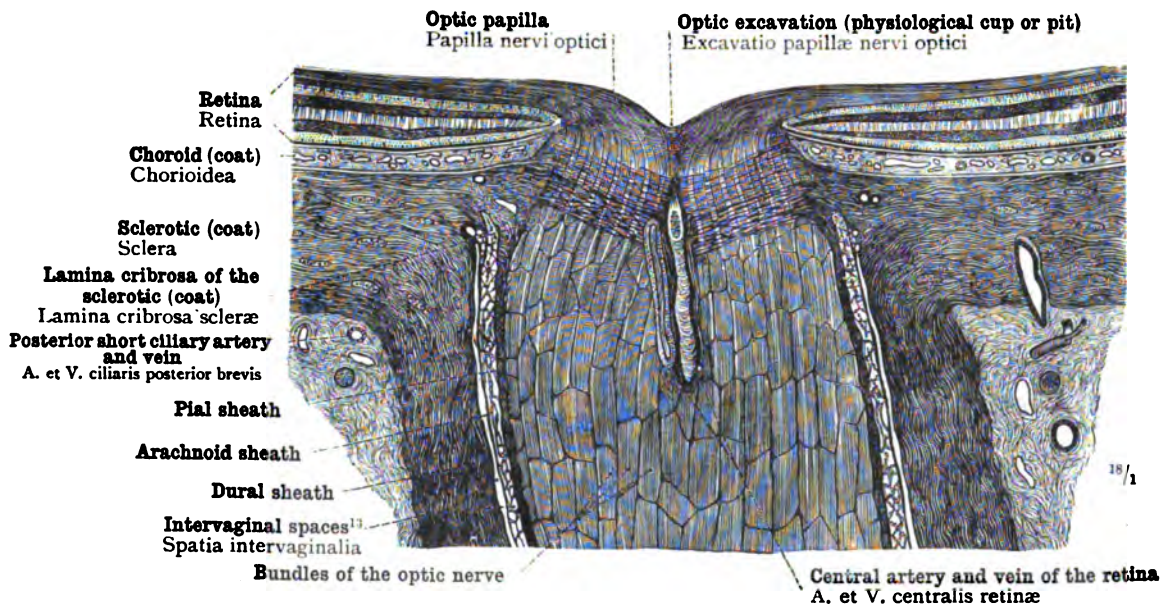


FIG. 1357.—THE TERMINAL PORTION OF THE OPTIC NERVE, N. OPTICUS, AND ITS ENTRANCE INTO THE EYEBALL, IN HORIZONTAL SECTION. THE SHEATHS OF THE OPTIC NERVE, VAGINÆ NERVI OPTICI, IN LONGITUDINAL SECTION.

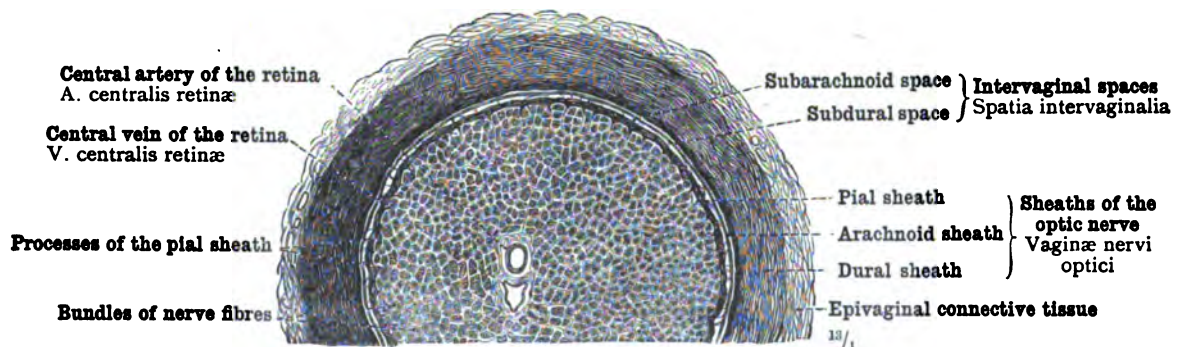


FIG. 1358.—PART OF A TRANSVERSE SECTION OF THE ANTERIOR PORTION OF THE OPTIC NERVE. THE SHEATHS OF THE OPTIC NERVE, VAGINÆ NERVI OPTICI, IN TRANSVERSE SECTION.

¹ See Appendix, note ⁴⁹⁰.

² Or *stratum opticum*.

³ Also known as the *stratum granularum internum* or *ganglion retinae*.

⁴ Also known as the *stratum granularum externum*.

⁵ Sometimes spoken of in English as the *internal limiting membrane*.

⁶ Also known as the *stratum granularum externum*.

⁷ Sometimes spoken of in English as the *external limiting membrane*.

⁸ Also known as the *stratum granularum externum*.

⁹ The *pigmentary layer* of the retina is also known as the *stratum nigrum*; in the official German nomenclature it is the *stratum pigmenti retinae*.

¹⁰ See Appendix, note ⁴⁹¹.

¹¹ Sometimes separately classed as *subdural* and *subarachnoid spaces* of the optic nerves. (See Fig. 1358.)

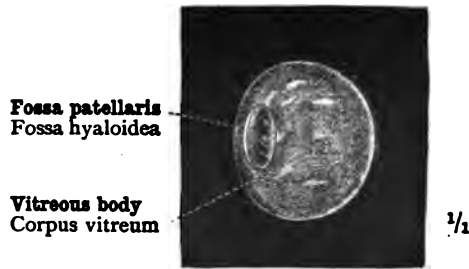


FIG. 1359.—THE VITREOUS BODY, CORPUS VITREUM, REMOVED FROM THE EYE IN THE FRESH STATE, WITH THE SAUCER-SHAPED HOLLOW, FOSSA PATELLARIS (FOSSA HYALOIDEA), IN WHICH THE LENS LIES. SEEN OBliquely FROM THE SIDE AND BEFORE.

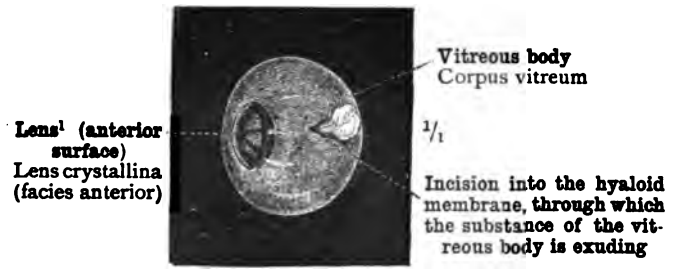


FIG. 1360.—THE VITREOUS BODY, CORPUS VITREUM, WITH THE LENS, LENS CRYSTALLINA, REMOVED FROM THE EYE IN THE FRESH STATE. THROUGH A SMALL INCISION IN THE HYALOID MEMBRANE, MEMBRANA HYALOIDEA, A PART OF THE SUBSTANCE OF THE VITREOUS BODY, CORPUS VITREUM, HAS EXUDED.

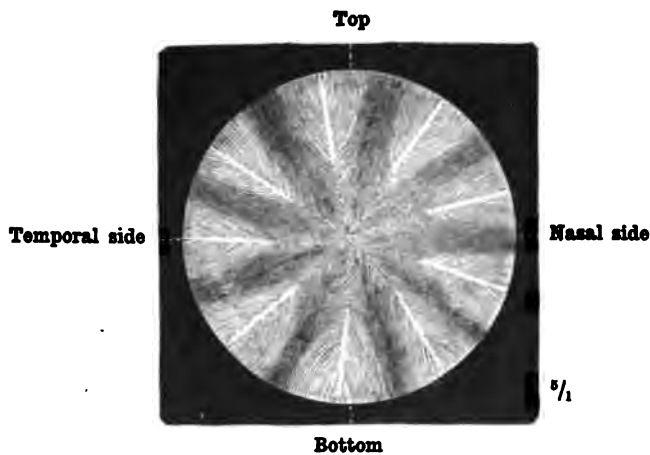


FIG. 1361.—ANTERIOR SURFACE, FACIES ANTERIOR.

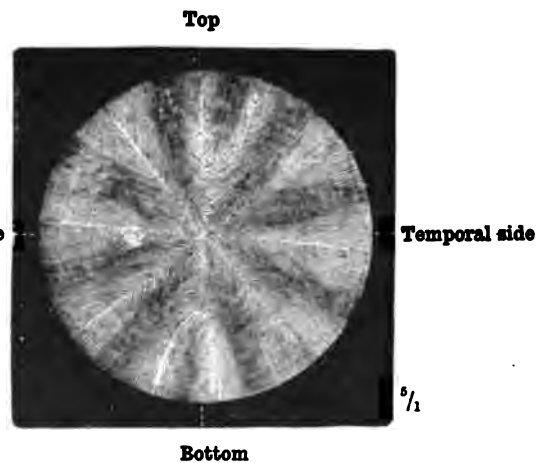


FIG. 1362.—POSTERIOR SURFACE, FACIES POSTERIOR.

THE LENS OF THE EYE, LENS CRYSTALLINA (*see note ¹ to p. 892*), REMOVED FROM THE BODY WITHIN A FEW HOURS AFTER DEATH, AND DEPICTED LYING IN FORMALIN SOLUTION WITH THE AID OF THE STEREOSCOPIC MICROSCOPE. COURSE AND ARRANGEMENT OF THE LENS FIBRES, FIBRÆ LENTIS.

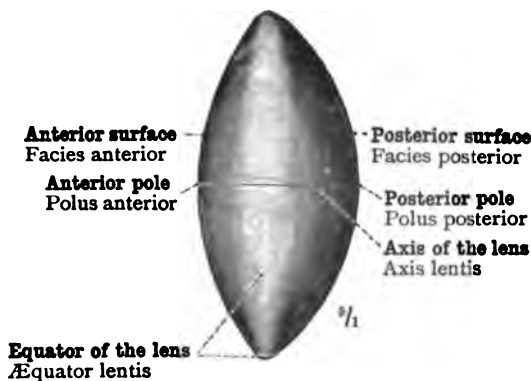


FIG. 1363.—THE TERMS USED IN THE ORIENTATION OF THE LENS.

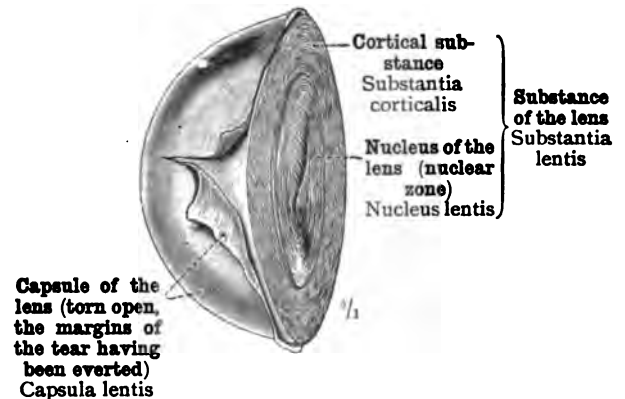


FIG. 1364.—HALF OF THE LENS WITH THE CAPSULE OF THE LENS PARTIALLY PEELED OFF.

The fresh lens was hemisected, and was drawn after it had been allowed to lie in water for twenty-four hours.

¹ See note ¹ to p. 892.

Corpus vitreum—The vitreous body.—Lens crystallina—The lens.

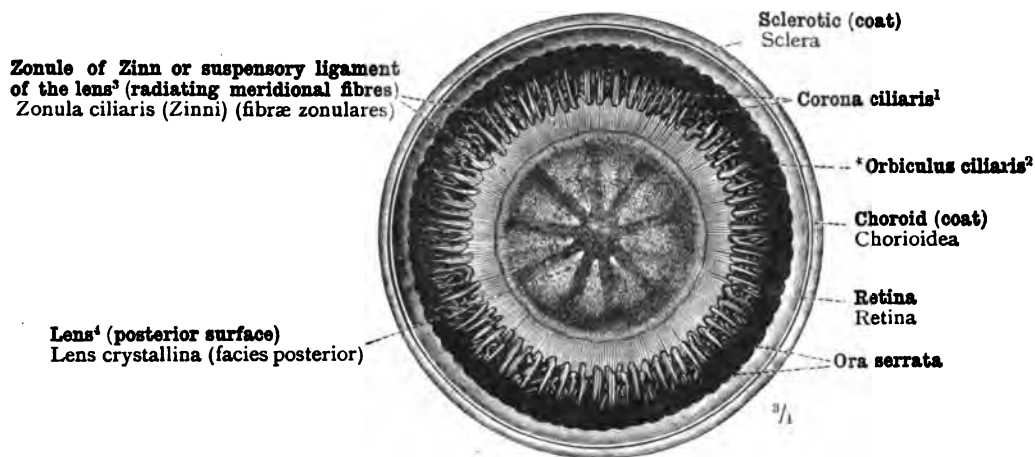


FIG. 1365.—THE ZONULE OF ZINN OR SUSPENSORY LIGAMENT OF THE LENS, ZONULA CILIARIS ZINNI (*see Appendix, note 489*), VIEWED FROM BEHIND, IN CONNEXION WITH THE LENS AND THE CILIARY BODY.

IN AN EYEBALL REMOVED FROM THE BODY WITHIN A FEW HOURS AFTER DEATH, THE CORNEA WAS EXCISED, THE IRIS COMPLETELY REMOVED, AND THE EYEBALL WAS THEN CUT IN TWO A LITTLE IN FRONT OF THE EQUATOR. THE ZONULE OF ZINN OR SUSPENSORY LIGAMENT OF THE LENS, ZONULA CILIARIS ZINNI (*see Appendix, note 489*), WAS NOW VISIBLE IN THE ANTERIOR SEGMENT OF THE EYE, COVERED ONLY BY THE PERFECTLY TRANSPARENT VITREOUS SUBSTANCE. THE PREPARATION WAS THEN IMMERSSED IN 3 PER CENT. FORMALIN SOLUTION, AND WAS DRAWN IMMEDIATELY WITH THE AID OF THE STEREOSCOPIC MICROSCOPE, THE ILLUMINATION BEING PARTLY BY DIRECT, PARTLY BY TRANSMITTED LIGHT.

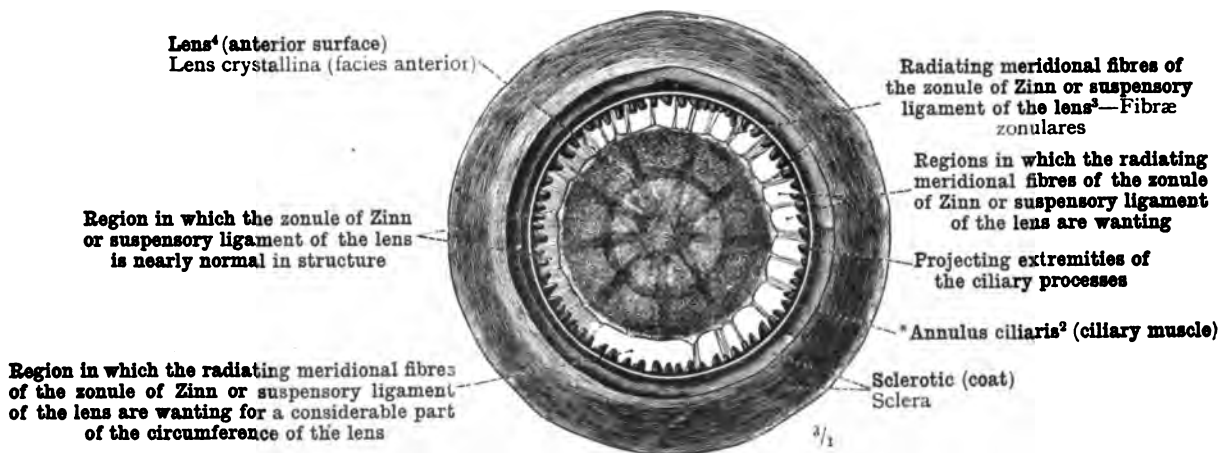


FIG. 1366.—A CASE OF INCOMPLETE DEVELOPMENT OF THE ZONULE OF ZINN OR SUSPENSORY LIGAMENT OF THE LENS, ZONULA CILIARIS ZINNI (*see Appendix, note 489*), INTRODUCED TO SHOW THE NATURE OF THE TRACTION WHICH IS EXERCISED BY THE ZONULE ON THE LENS. SEEN FROM BEFORE.

THE LENS IS SEEN TO BE DRAWN AS A WHOLE TOWARDS THAT SIDE ON WHICH A PORTION OF THE ZONULE IS ALMOST FULLY DEVELOPED. IN THOSE REGIONS IN WHICH THE RADIATING MERIDIONAL FIBRES OF THE ZONULE (FIBRÆ ZONULARES) ARE DEVELOPED IN ISOLATED SLENDER BUNDLES ONLY, THE MARGIN OF THE LENS IS NOTABLY DRAWN OUTWARDS AT THE POINTS WHERE THESE BUNDLES ARE INSERTED. GENERALLY SPEAKING, ALL ALONG THE EQUATOR OF THE LENS THE CAPSULE IS SEEN TO BE DRAWN A LITTLE AWAY FROM THE SUBSTANCE OF THE LENS.

The specimen was freshly prepared in the same manner as described at the foot of Fig. 1365.

¹ See Appendix, note 485.

² See Appendix, note 489.

³ See Appendix, note 489.

⁴ See note ² to p. 892.

Zonula ciliaris (Zinni)—The zonule of Zinn or suspensory ligament of the lens.

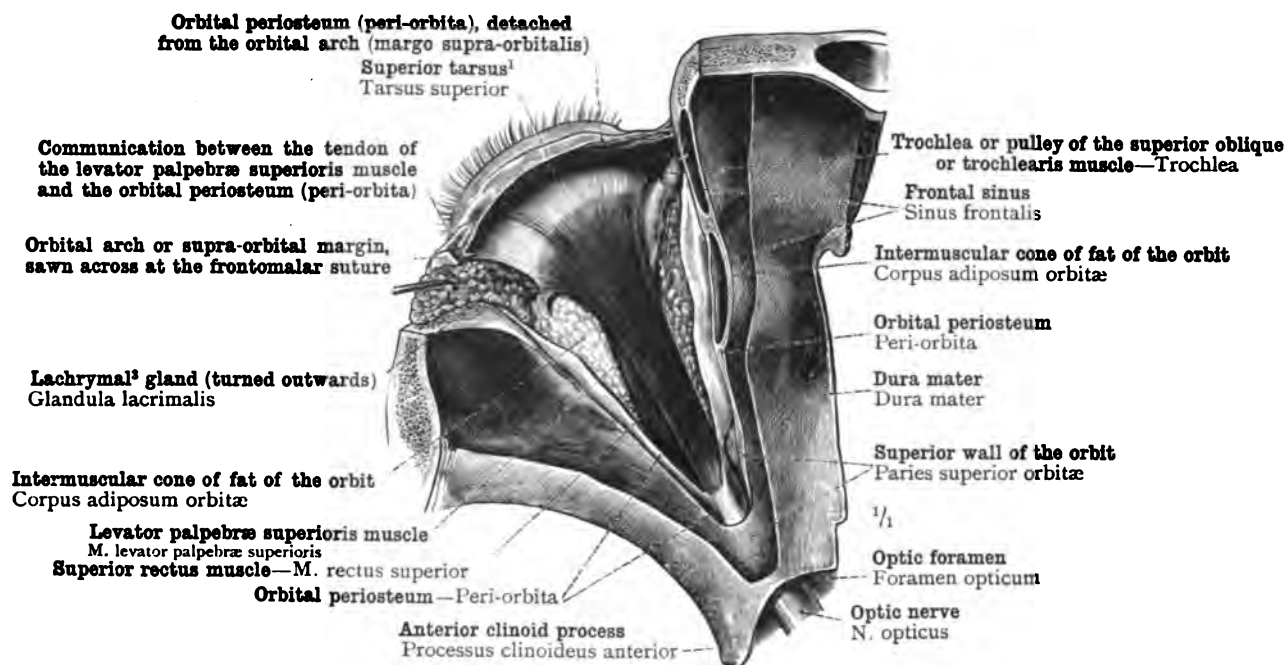


FIG. 1367.—THE LEVATOR PALPEBRÆ SUPERIORIS MUSCLE, SEEN FROM ABOVE.

Displayed by cutting away the upper wall of the left orbit and the partial removal of the orbital periosteum (peri-orbita). The lachrymal gland has been drawn outwards.

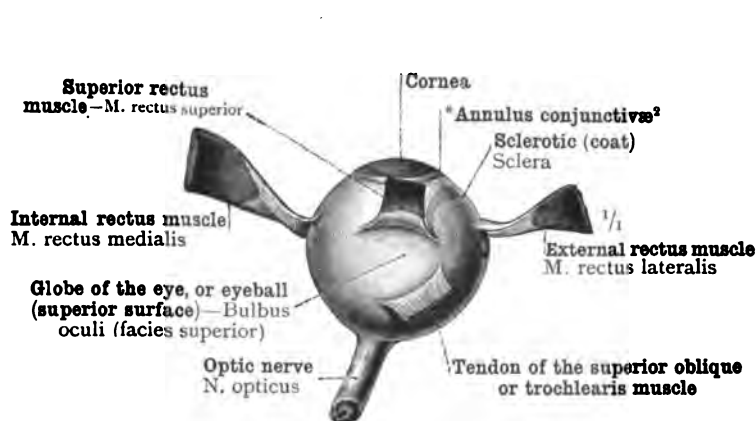


FIG. 1368.—THE INSERTIONS OF THE SUPERIOR, EXTERNAL, AND INTERNAL RECTUS MUSCLES INTO THE EYEBALL; ALSO THAT OF THE SUPERIOR OBLIQUE OR TROCHLEARIS MUSCLE. RIGHT EYE. SEEN FROM ABOVE.

The extremities of the muscles have been raised from the eyeball and inverted.

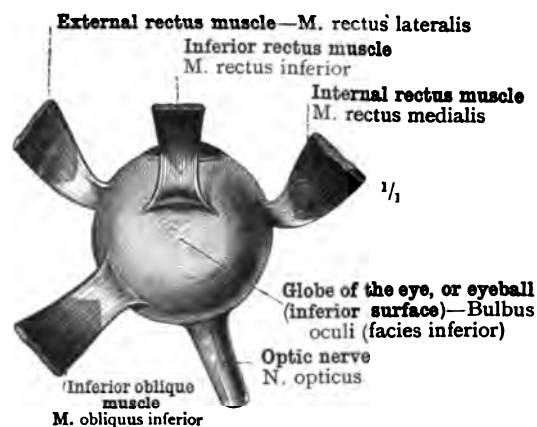


FIG. 1369.—THE INSERTIONS INTO THE EYEBALL OF THE INFERIOR, INTERNAL, AND EXTERNAL RECTUS MUSCLES; ALSO THAT OF THE INFERIOR OBLIQUE MUSCLE. RIGHT EYE. SEEN FROM BELOW.

The extremities of the muscles have been raised from the eyeball and inverted.

¹ See Appendix, note 472.

² See Appendix, note 493.

³ The spelling *lacrimal*, etymologically more correct than *lachrymal*, is used by some English writers. The form *lachrymal* is, however, in far more general use.

Musculi oculi—The muscles of the eyeball.

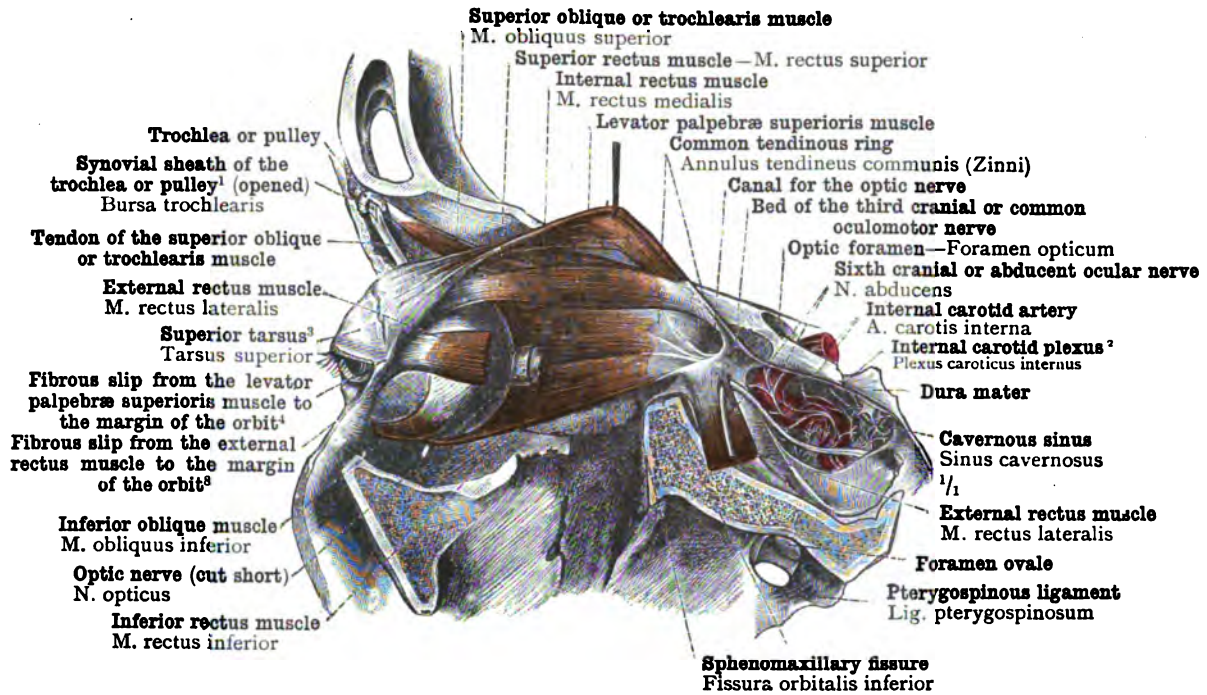


FIG. 1370.—THE MUSCLES OF THE ORBIT FROM THE TEMPORAL SIDE. LEFT EYE.

After the superior and external walls of the orbit had been removed, the external rectus muscle was cut across, its posterior segment was turned downwards, and the optic nerve was excised.

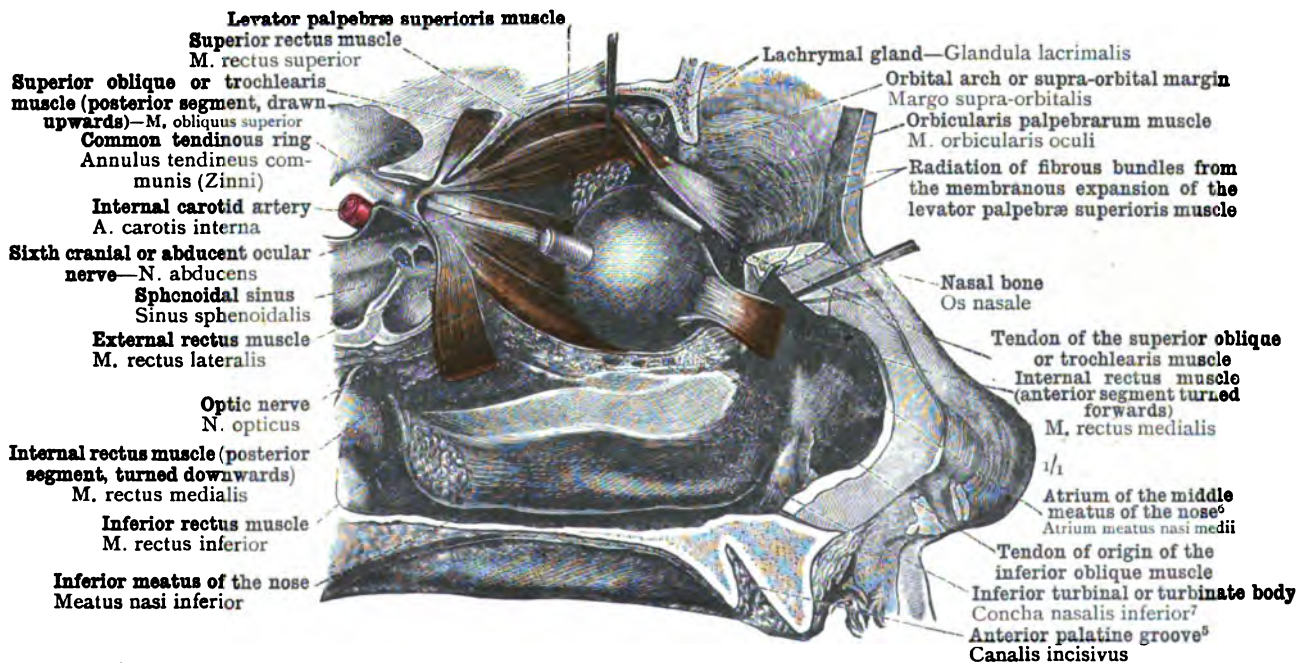


FIG. 1371.—THE MUSCLES OF THE ORBIT FROM THE NASAL SIDE. LEFT EYE.

After the internal and part of the superior walls of the orbit had been removed, the internal rectus muscle was cut across, its anterior segment being turned forwards, its posterior segment downwards, and the optic nerve was excised. Of the superior oblique or trochlearis muscle, the posterior extremity and a portion of the tendon of insertion were retained; the inferior oblique muscle was cut across near its origin.

¹ See Appendix, note 494.

² See note 3 to p. 859.

³ See Appendix, note 492.

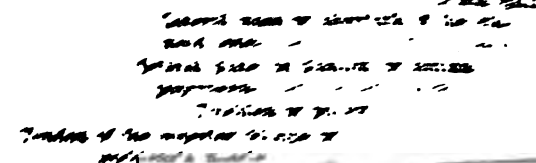
⁴ See Appendix, note 495.

⁵ See Appendix, note 493.

⁶ By Macalister called the *region of the atrium*.

⁷ See note 1 to p. 944.

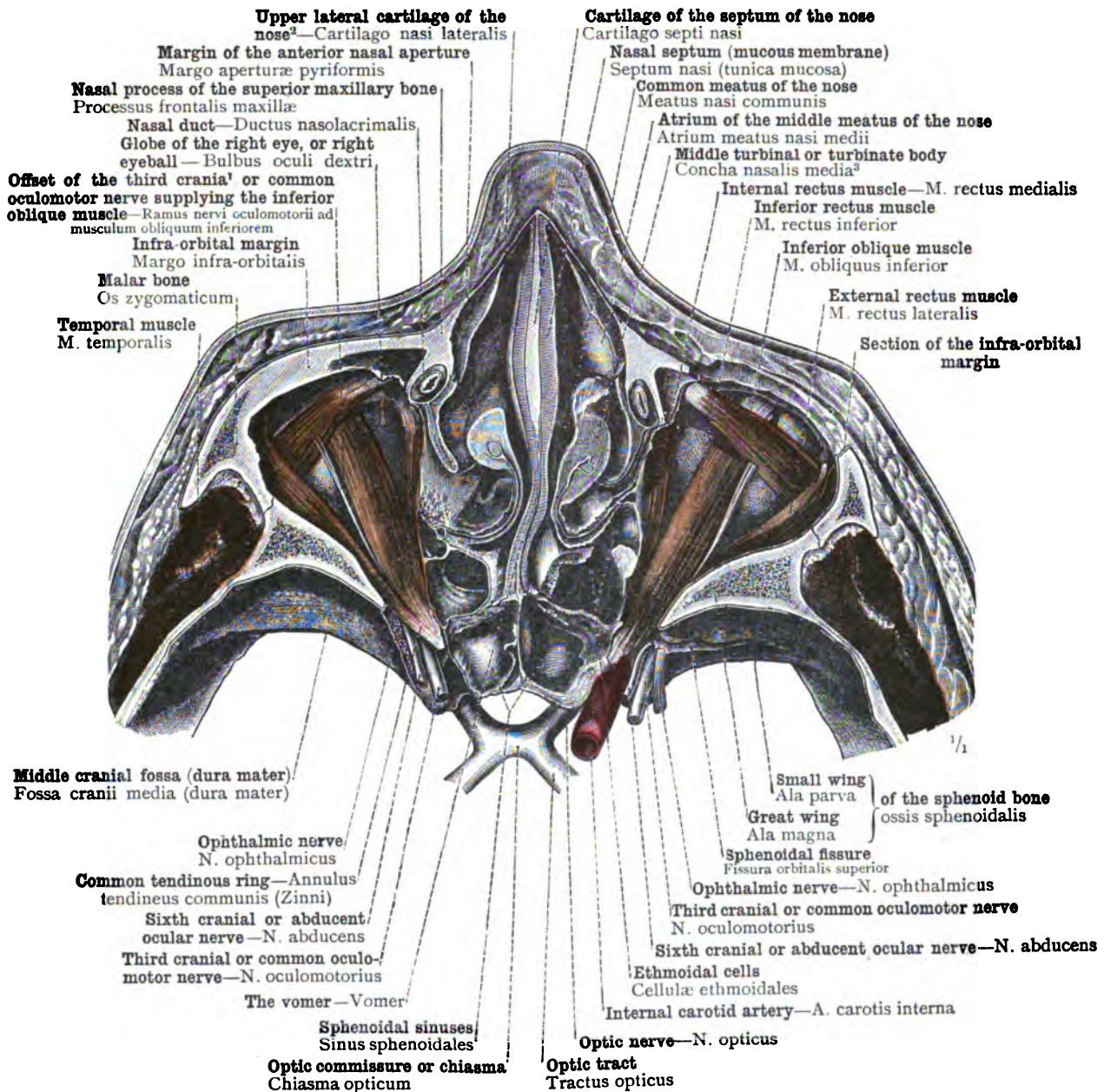
⁸ Or *outer check ligament*, see Appendix, note 495.



The superior and part of the external walls of the orbits having been cut away, the levator palpebrae superioris muscles were entirely removed, and the rectus superior muscles were detached from their origins and turned forwards. On the left side the optic foramen was opened from above, in order to show the connexion between the cranial dura mater and the orbital periosteum (periorbita).

¹ *For Appendix, note #4.* ² *For Appendix, note #2.*
³ *For Appendix, note #4.* This name is given by Van Daele and Todd to the slight ridge which connects the anterior margins of the optic laminae and from the anterior boundary of the optic groove in which the optic commissure lies. It is the boundary also between the middle portion of the anterior and middle cranial fossa. It is left unnamed by Quain, nor is it indicated by name in the osteological section of the Atlas.

Musculi oculi The muscles of the orbit.



¹ By Macalister called the *region of the atrium*.

² The *upper lateral cartilages* are by Macalister called the *lateral expansions of the septal cartilage*.

³ See note ¹ to p. 944.

FIG. 1373.—THE POSITION OF THE EYEBALL IN THE ORBIT, AND THE RELATIONS OF THE MUSCLES OF THE ORBIT TO THE EYEBALL. SEEN FROM BELOW.

In the facial portion of a head previously hardened in chromic acid and alcohol, a horizontal section was carried backwards beneath the infra-orbital margins through the body of the sphenoid bone and the inner portions of the sphenoidal fissures. In the upper segment, by the removal of the orbital cone of fat, the orbital muscles accessible from below have been displayed. On the left side the infra-orbital margin has been completely removed.

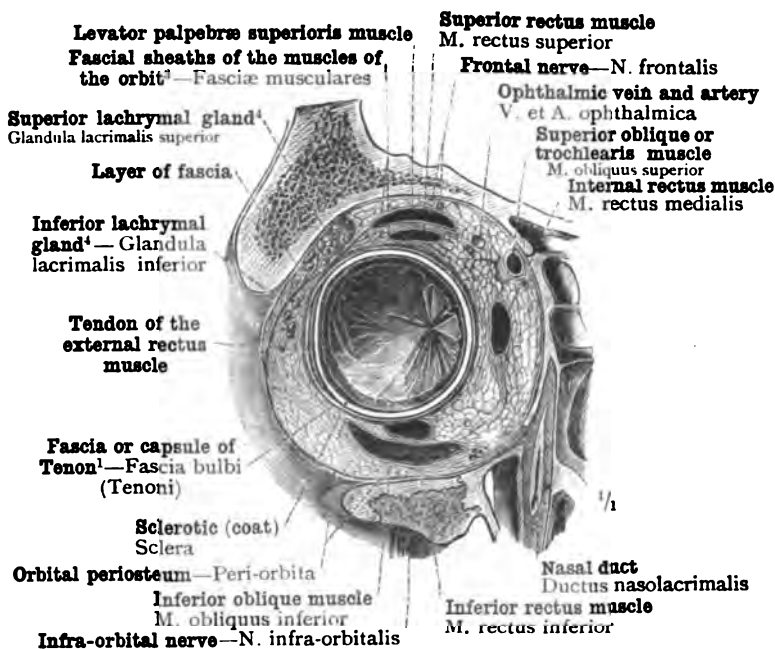


FIG. 1374.—THE POSITION OF THE EYEBALL AND OF THE MUSCLES OF THE ORBIT, AS SEEN IN A CORONAL SECTION THROUGH THE RIGHT ORBIT OF A HEAD FIRST HARDENED IN CHROMIC ACID AND ALCOHOL, AND SUBSEQUENTLY DECALCIFIED IN HYDROCHLORIC ACID.

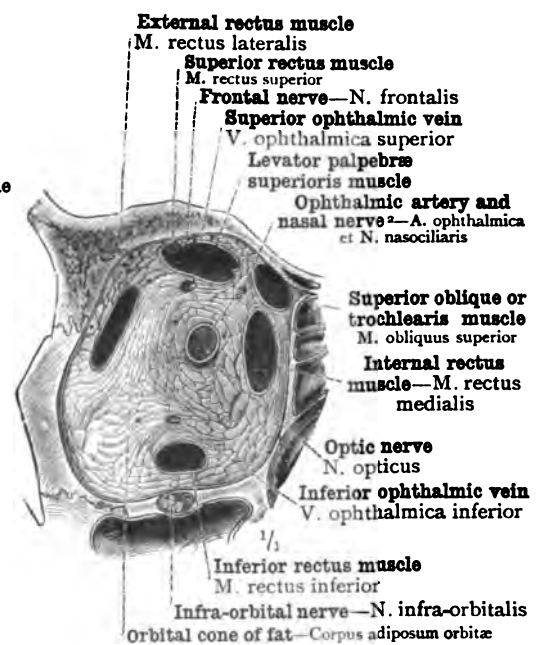


FIG. 1375.—THE POSITION OF THE OPTIC NERVE AND OF THE MUSCLES OF THE ORBIT, AS SEEN IN A CORONAL SECTION THROUGH THE RIGHT ORBIT OF A HEAD FIRST HARDENED IN CHROMIC ACID AND ALCOHOL, AND SUBSEQUENTLY DECALCIFIED IN HYDROCHLORIC ACID.

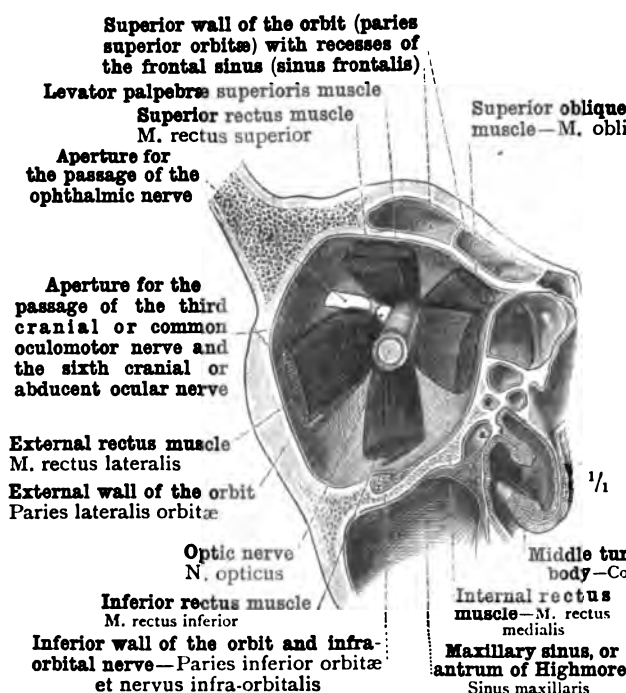


FIG. 1376.—POSITION AND DIRECTION OF THE MUSCLES OF THE ORBIT IN RELATION TO THE OPTIC NERVE, AS SEEN IN THE POSTERIOR SEGMENT OF A CORONALLY DIVIDED RIGHT ORBIT. THE HEAD WAS PREVIOUSLY HARDENED IN CHROMIC ACID AND ALCOHOL.

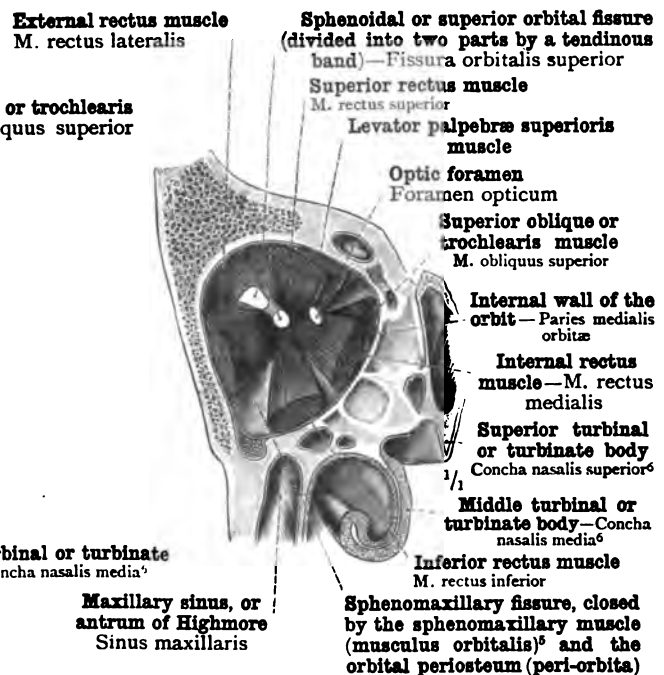


FIG. 1377.—POSITION OF THE MUSCLES OF THE ORBIT IN RELATION TO THE OPTIC FORAMEN AND THE SPHENOIDAL OR SUPERIOR ORBITAL FISSURE, AS SEEN IN THE POSTERIOR SEGMENT OF A CORONALLY DIVIDED RIGHT ORBIT. THE HEAD WAS PREVIOUSLY HARDENED IN CHROMIC ACID AND ALCOHOL.

¹ Sometimes called *tunica vaginalis oculi*.

³ See Appendix, note 498.

² Also known as the *oculonasal* and as the *nasociliary nerve*.

⁴ See Appendix, note 505.

⁵ See Appendix, note 458.

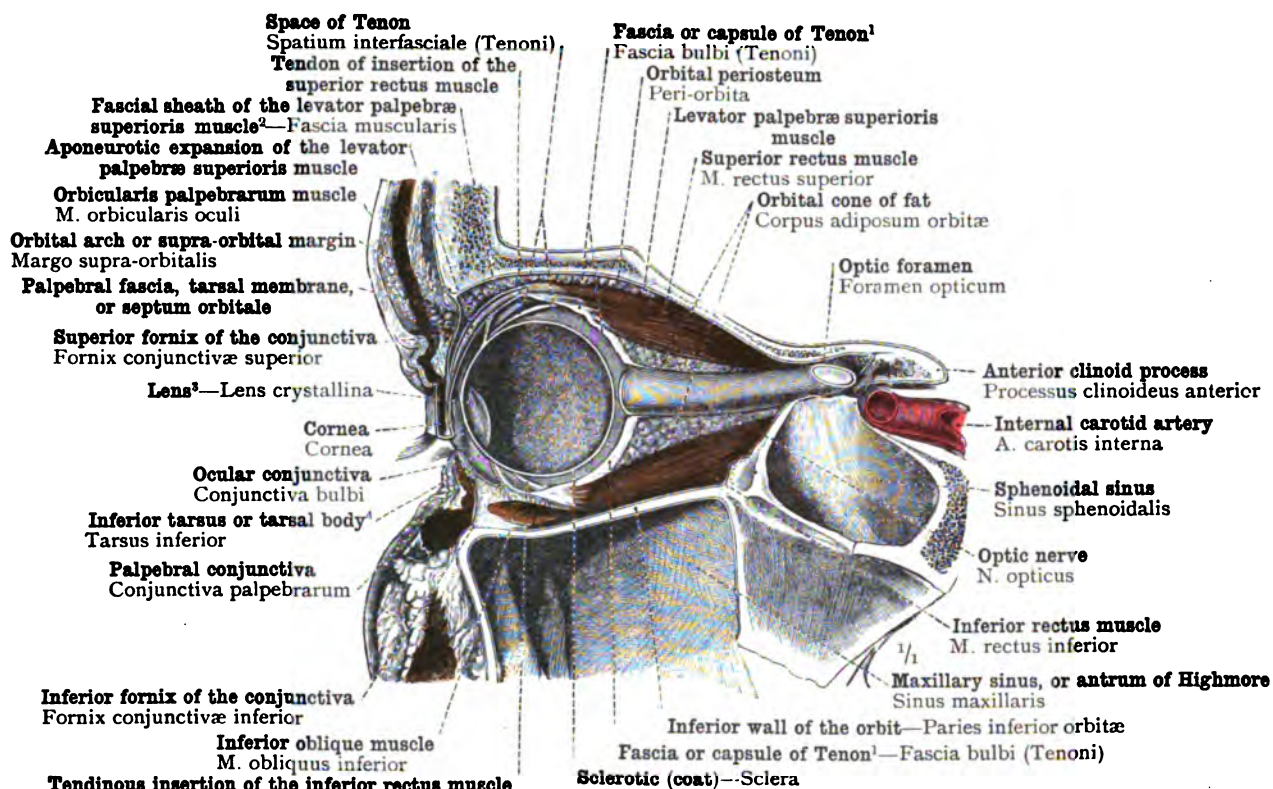


FIG. 1378.—FASCIA OR CAPSULE OF TENON,¹ FASCIA BULBI, AND ITS RELATION TO THE TENDONS OF THE SUPERIOR AND INFERIOR RECTUS MUSCLES (see Appendix, note 496).

The right orbit of a head previously hardened in chromic acid and alcohol was divided sagittally in such a manner that the section passed through the nasal half of the eyeball and opened the optic foramen on the nasal side of the optic nerve. The fascia or capsule of Tenon has been withdrawn a little from the surface of the eyeball.

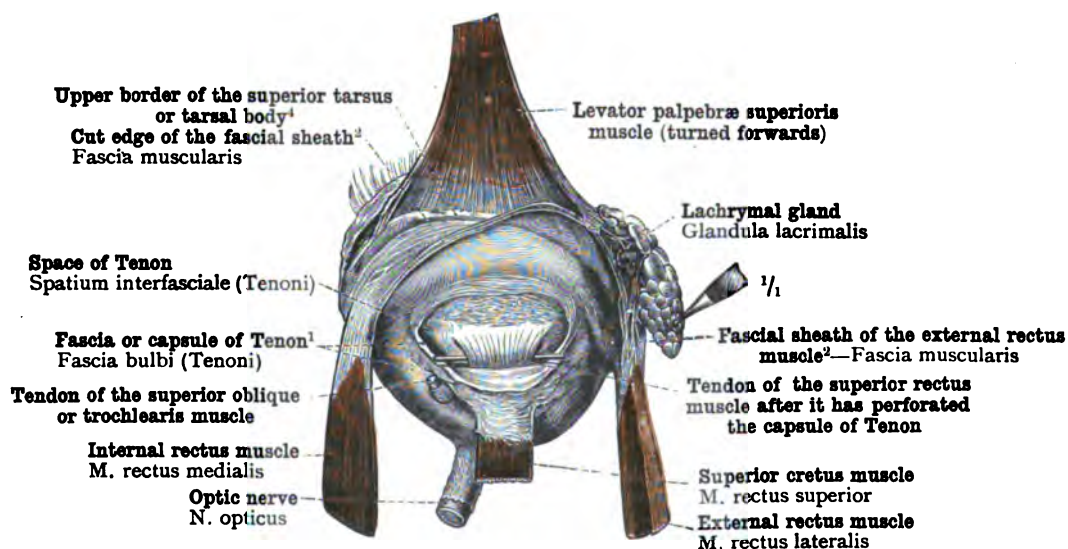


FIG. 1379.—FASCIA OR CAPSULE OF TENON, AND ITS RELATION TO THE TENDON OF THE SUPERIOR RECTUS MUSCLE, AS SEEN FROM ABOVE IN THE EXCISED RIGHT EYE.

The levator palpebræ superioris muscle has been turned forwards, and the capsule of Tenon has been opened by a transverse incision in the region of the tendon of the superior rectus muscle.

¹ Sometimes called *tunica vaginalis oculi*.

² See Appendix, note 495.

³ See note ¹ to p. 892.

⁴ See Appendix, note 492.

Musculi oculi—Muscles of the orbit.

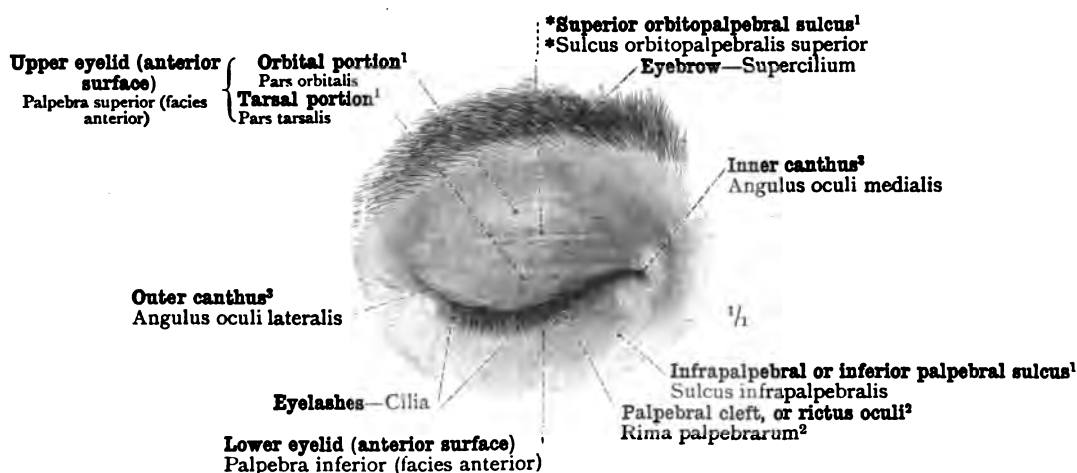


FIG. 1380.—THE CLOSED EYELIDS OF THE RIGHT EYE OF A YOUNG WOMAN, REPRODUCED FROM A LIFE-SIZED PHOTOGRAPH. ANTERIOR SURFACE OF THE EYELIDS, FACIES ANTERIOR PALPEBRARUM.

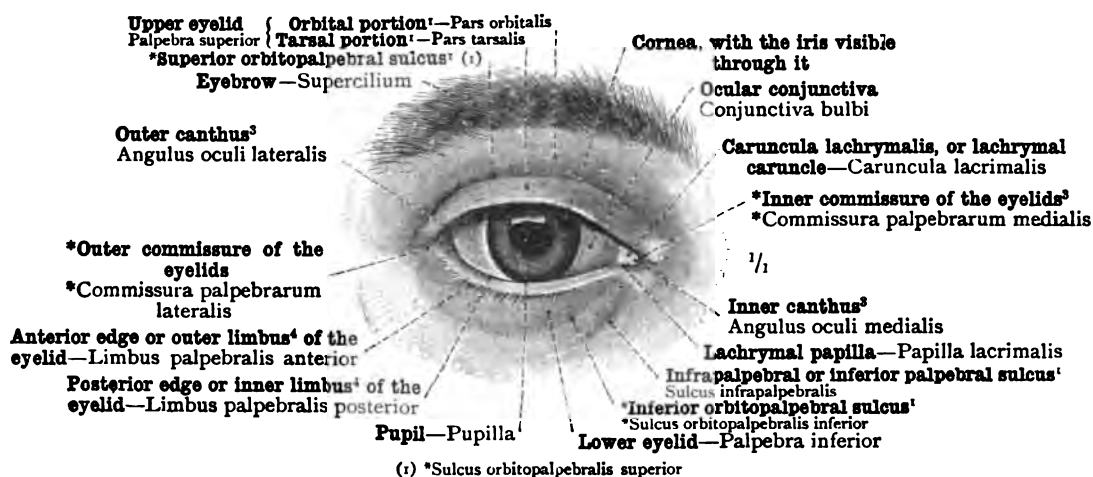


FIG. 1381.—THE SAME EYELIDS WITH THE EYE OPEN, REPRODUCED FROM A LIFE-SIZED PHOTOGRAPH. THE PALPEBRAL CLEFT, RICTUS OCULI, OR RIMA PALPEBRARUM (see *Appendix*, note 497).

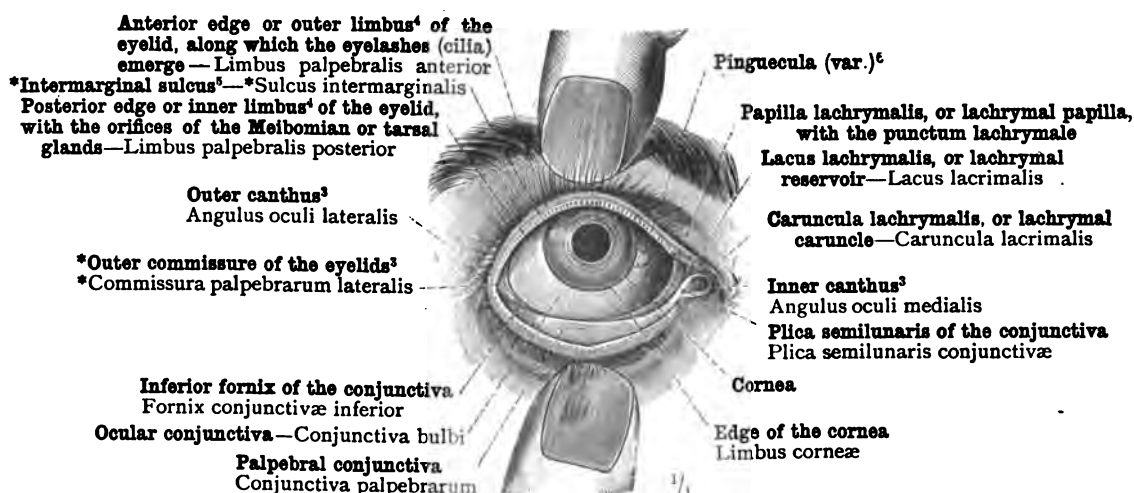


FIG. 1382.—THE WIDELY-OPENED EYELIDS OF THE RIGHT EYE OF AN ELDERLY PERSON. THE LOWER EYELID HAS BEEN EVERTED. PINGUECULA.

¹ See *Appendix*, note 496.

² See *Appendix*, note 497.

³ See *Appendix*, note 498.

⁴ The term *limbus* in connexion with the eyelid is used by Macalister, but not by Quain. The former writer speaks indifferently of the *limbus anterior* or *outer limbus*, and of the *limbus posterior* or *inner limbus* (*op. cit.*, p. 522, and Fig. 712, p. 643).

⁵ See *Appendix*, note 499.

⁶ See *Appendix*, note 500.



FIG. 1383.—THE POSTERIOR SURFACE OF THE EXCISED EYELIDS, FACIES POSTERIOR PALPEBRARUM. IN THE REGION OF THE Tarsi OR TARSAL MEMBRANES, THE MEIBOMIAN OR TARSAL GLANDS ARE VISIBLE BENEATH THE CONJUNCTIVA. RIGHT SIDE.

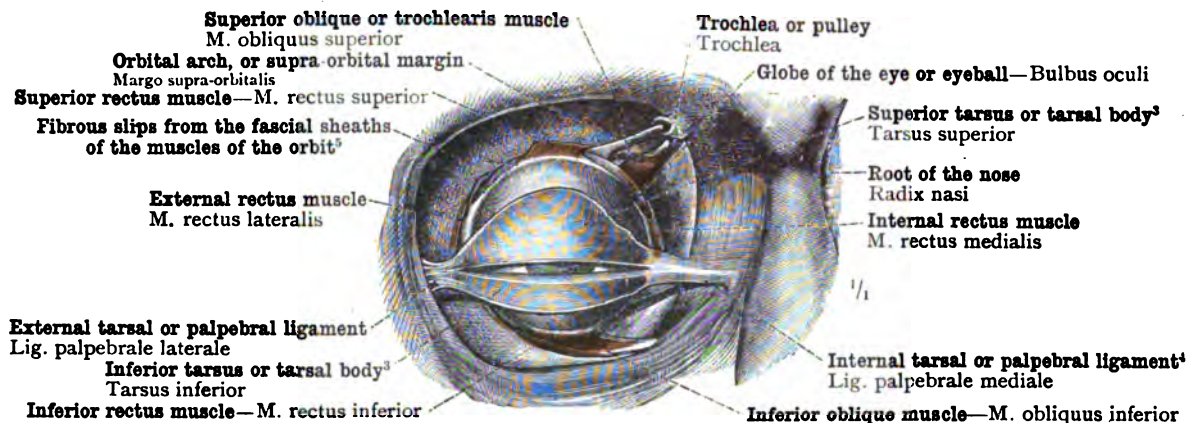


FIG. 1384.—THE SUPERIOR AND INFERIOR Tarsi OR TARSAL BODIES, TARSUS SUPERIOR ET TARSUS INFERIOR (see *Appendix*, note ⁴⁰³), OF THE RIGHT EYE, WITH THE INTERNAL TARSAL OR PALPEBRAL LIGAMENT, LIGAMENTUM PALPEBRALE MEDIALE (see note ⁴ below), AND THE EXTERNAL TARSAL OR PALPEBRAL LIGAMENT, LIGAMENTUM PALPEBRALE LATERALE, ISOLATED. THEIR RELATIONS TO THE EYEBALL WHEN THE LIDS ARE CLOSED. THE ATTACHMENT OF THE RECTI MUSCLES TO THE EYEBALL, AND THE COURSE OF THE OBLIQUE MUSCLES. VIEWED FROM BEFORE.

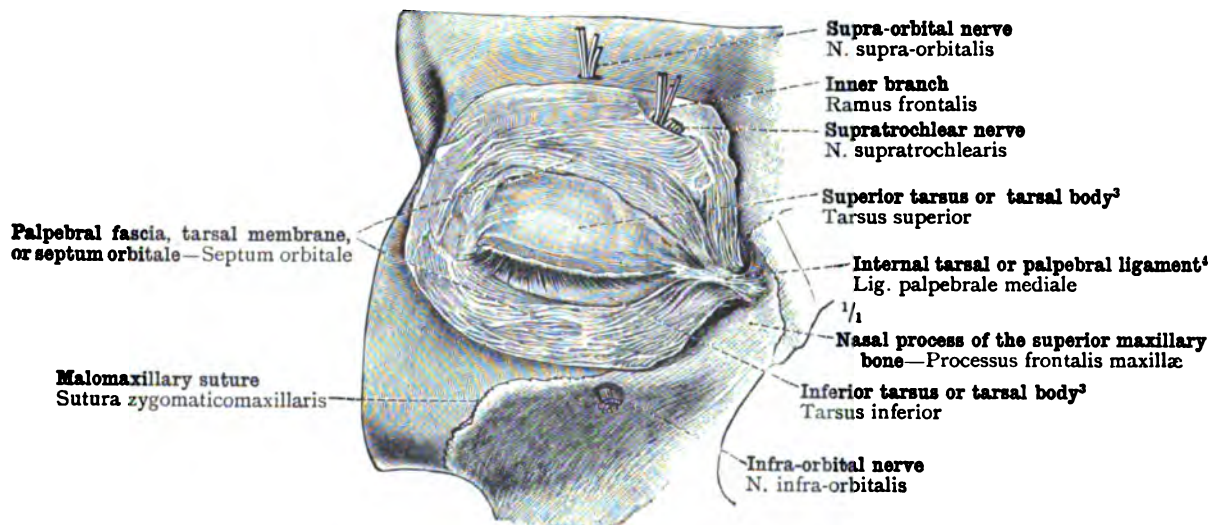


FIG. 1385.—THE PALPEBRAL FASCIA, TARSAL MEMBRANE, OR SEPTUM ORBITALE, IN CONNEXION WITH THE Tarsi OR TARSAL BODIES (see *Appendix*, note ⁴⁰³), DISPLAYED FROM BEFORE BY THE REMOVAL OF THE SKIN AND THE ORBICULARIS PALPEBRARUM MUSCLE. RIGHT SIDE.

¹ See *Appendix*, note 501.

² See *Appendix*, note 502.

³ See *Appendix*, note 492.

⁴ Known also as the tendon of the orbicularis muscle, or tendo palpebrarum.

⁵ See *Appendix*, note 495.

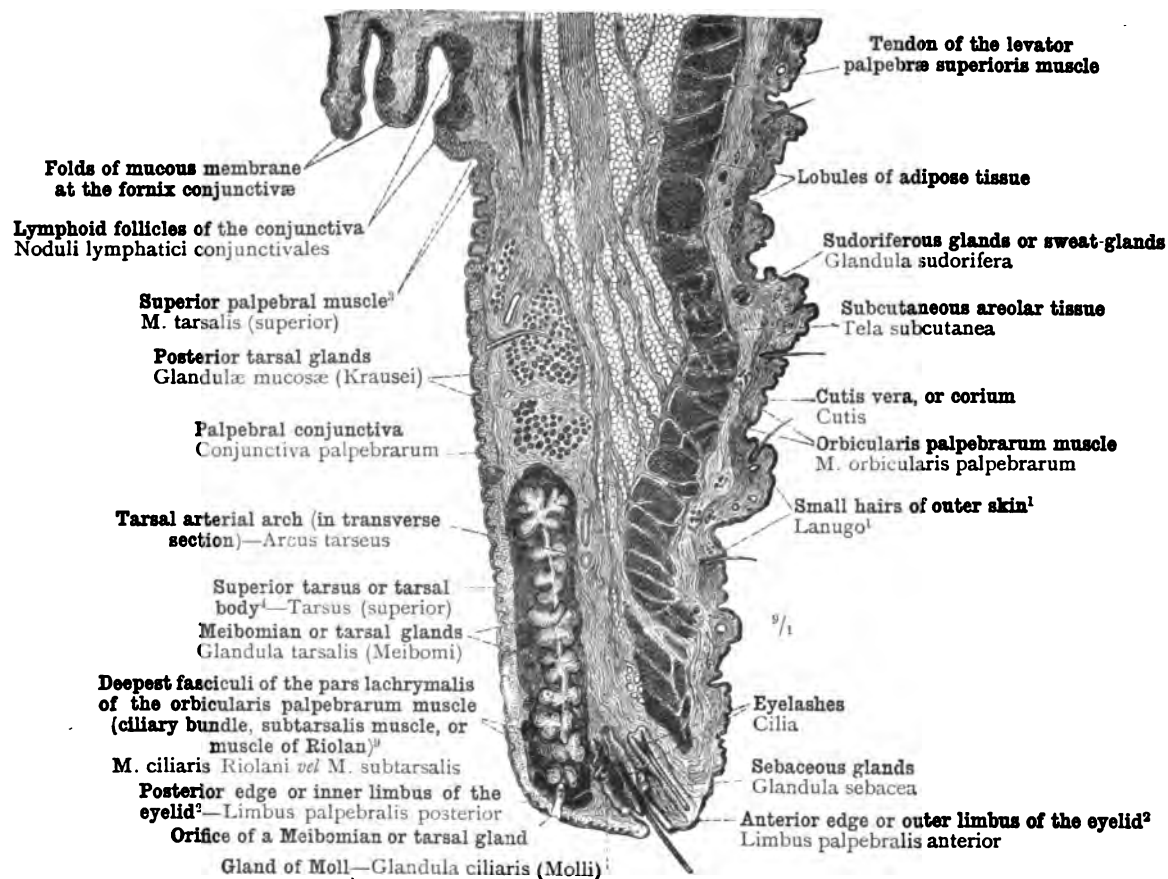


FIG. 1386.—THE UPPER EYELID IN SAGITTAL SECTION.

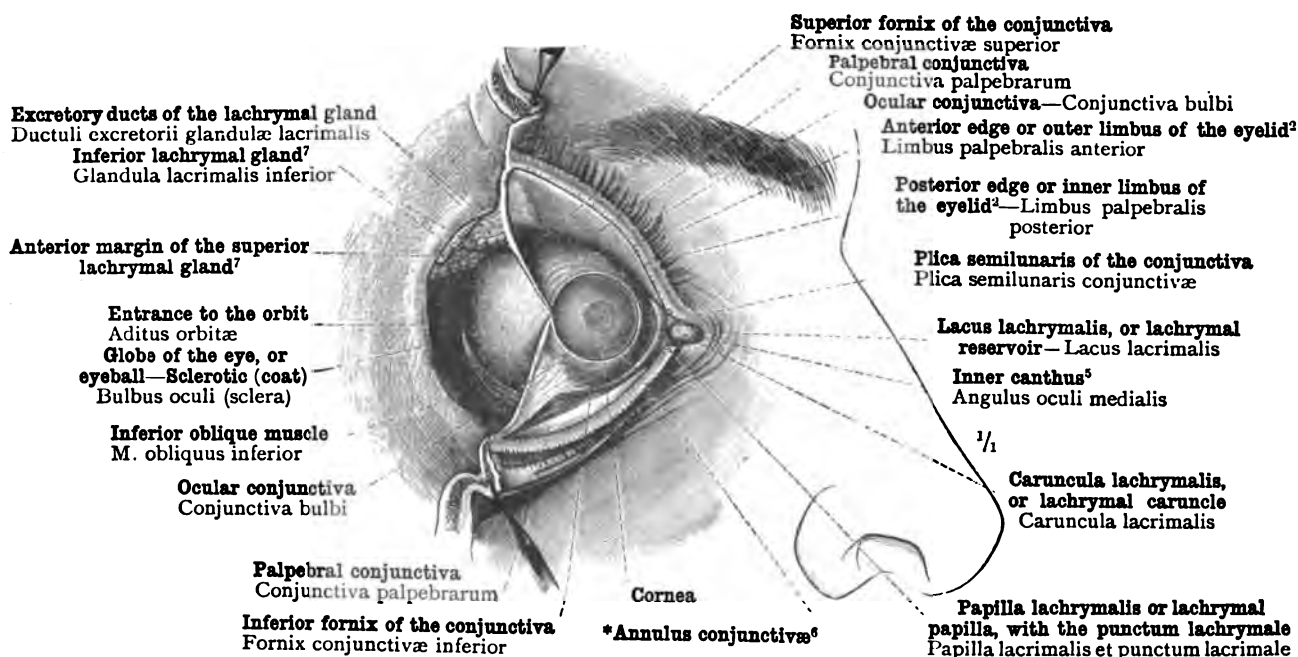


FIG. 1387.—THE CONJUNCTIVA OF THE RIGHT EYE. ITS THREE PARTS: THE PALPEBRAL CONJUNCTIVA, CONJUNCTIVA PALPEBRARUM; THE OCULAR CONJUNCTIVA, CONJUNCTIVA BULBI; AND ITS REFLECTION ALONG THE FORNICES.⁸ THE EYELIDS WERE SEPARATED BY DIVISION OF THE OUTER CANTHUS (see Appendix, note 4⁹⁸), AND A HORIZONTAL INCISION CARRIED THENCE THROUGH THE CONJUNCTIVA INWARDS TO THE MARGIN OF THE CORNEA.

¹ See Appendix, note 503.² See note 4 to p. 908.³ See Appendix, note 504.⁴ See Appendix, note 492.⁵ See Appendix, note 498.⁶ See Appendix, note 493.⁷ See Appendix, note 501.⁸ This part of the conjunctiva is in the German original called *der Uebergangstheil*, the transitional part. No Latin term is used.⁹ See Appendix, note 501.

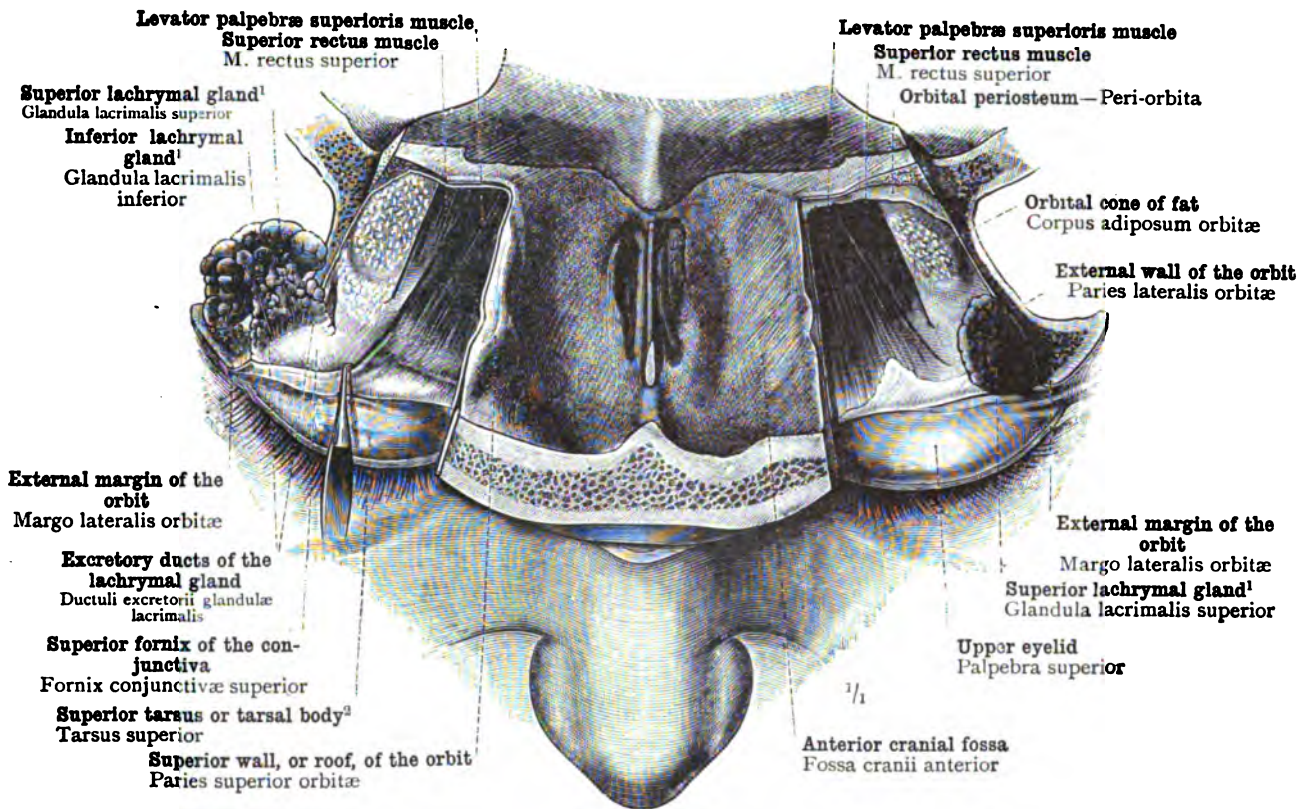


FIG. 1388.—THE LACHRYMAL GLAND, GLANDULA LACHRYMALIS (see Appendix, note ⁶⁰⁵), DISPLAYED BY OPENING THE ORBIT FROM ABOVE. THE LEFT LACHRYMAL GLAND IS SEEN IN ITS NATURAL POSITION, BUT THE RIGHT GLAND, IN ORDER TO EXPOSE ITS EXCRETORY DUCTS, HAS BEEN TURNED BACKWARDS.

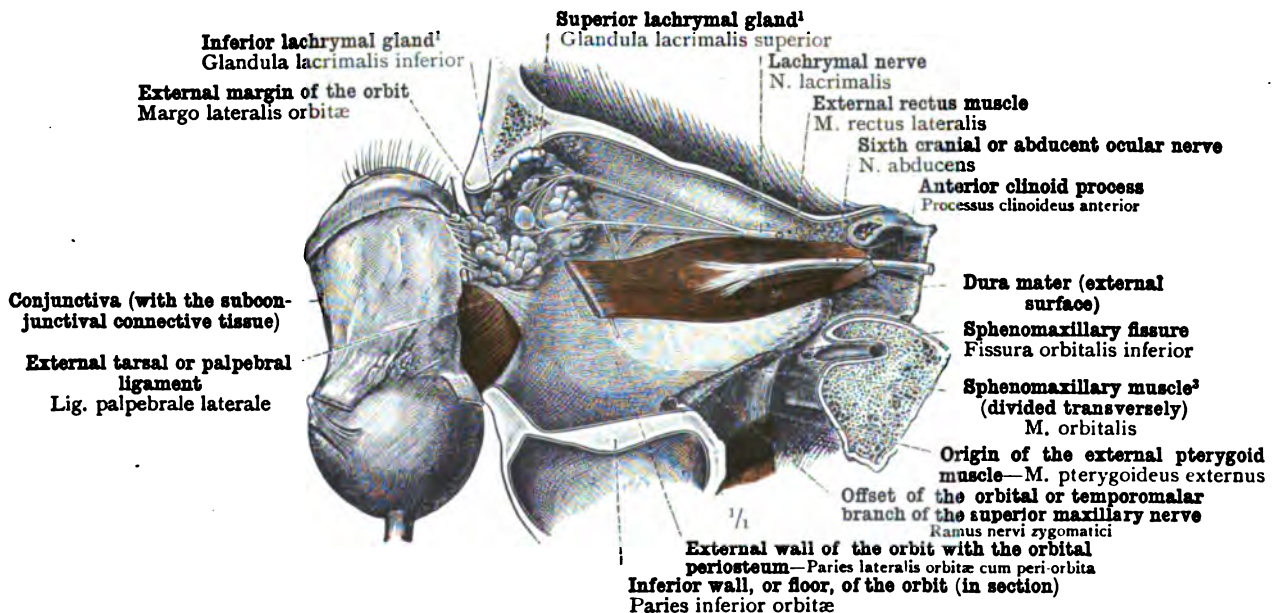


FIG. 1389.—THE NATURAL POSITION OF THE LACHRYMAL GLAND, IN RELATION TO THE WALL OF THE ORBIT AND TO THE EXTERNAL TARSAL OR PALPEBRAL LIGAMENT. OUTER HALF OF THE RIGHT ORBIT.

The eyeball, together with the fully-exposed conjunctiva, the folds of which have been obliterated by tension, has been withdrawn from the orbit. The excretory ducts, ductuli excretorii, of the lacrimal gland have been slightly raised by means of a probe which has been passed beneath them.

¹ See Appendix, note ⁵⁰⁵.

² See Appendix, note ⁴⁹².

³ See Appendix, note ⁴⁵⁸.

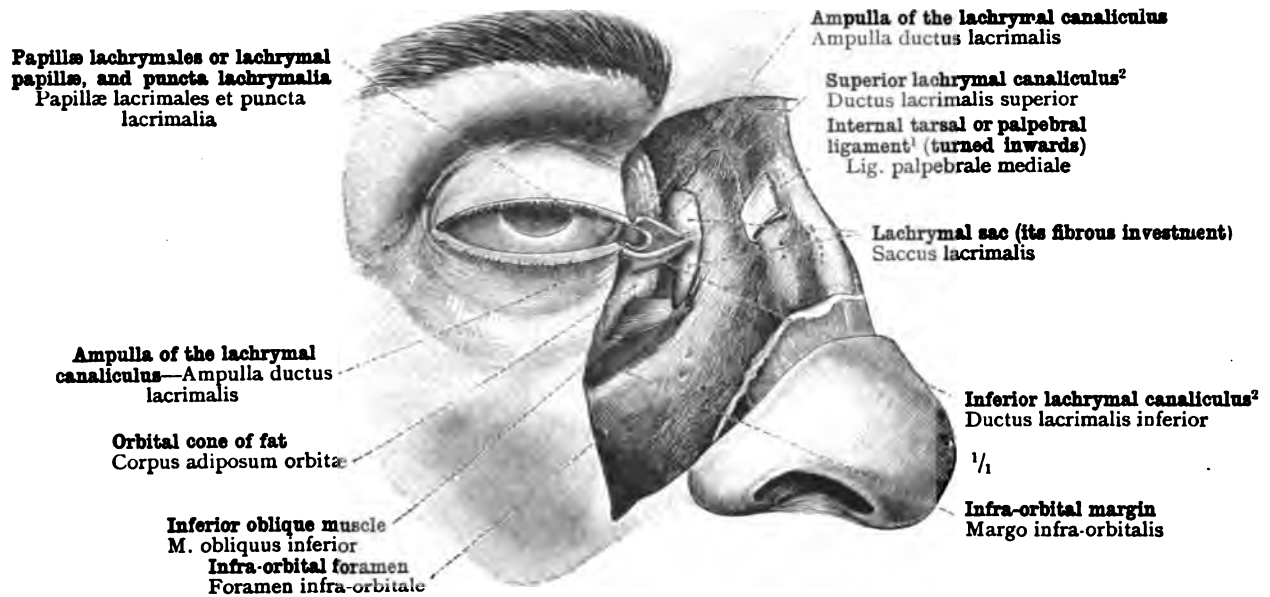


FIG. 1390.—THE LACHRYMAL SAC, SACCUS LACRIMALIS, WITH THE LACHRYMAL CANALICULI, DUCTUS LACRIMALES, DISPLAYED BY THE REMOVAL OF THE SKIN, THE INTERNAL TARSAL OR PALPEBRAL LIGAMENT¹, THE ORBICULARIS PALPEBRARUM MUSCLE, AND THE OTHER FACIAL MUSCLES IN THE NEIGHBOURHOOD. THE FIBROUS INVESTMENT OF THE LACHRYMAL SAC IS EXPOSED. RIGHT SIDE.

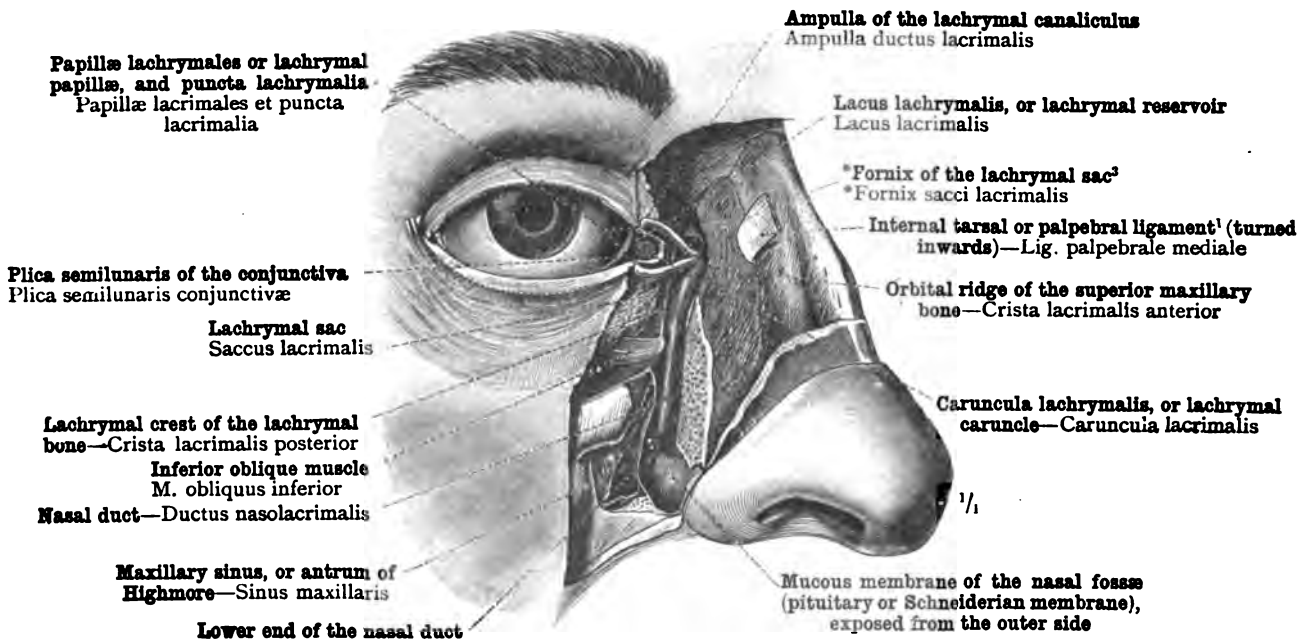


FIG. 1391.—THE LACHRYMAL SAC, SACCUS LACRIMALIS, WITH THE LACHRYMAL CANALICULI, DUCTUS LACRIMALIS, AND THE NASAL DUCT, DUCTUS NASOLACRIMALIS, OF THE RIGHT SIDE.

In the preparation shown in Fig. 1390, the substance of the superior maxillary bone was removed from without inwards as far as the lachrymal groove, sulcus lacrimalis, and the anterior and external walls of the nasal duct, ductus nasolacrimalis, were thus exposed up to the point at which these walls become continuous with mucous membrane of the nasal fossæ. The fibrous investment of the lachrymal sac was also removed, so that the outer side of the mucous membrane, alike of the lachrymal sac and of the nasal duct, is exposed to view.

¹ Known also as the *tendon of the orbicularis muscle*, or *tendo palpebrarum*.

² *Lachrymal Canaliculi*.—Quain speaks of these as the *lachrymal canals*, but this usage is exceptional.

³ **Fornix of the Lachrymal Sac*.—The name of *fornix sacci lacrimalis* is given by Toldt to the upper blind extremity of the lachrymal sac. The term is not used by Quain or Macalister.

Apparatus lacrimalis—The lachrymal apparatus.

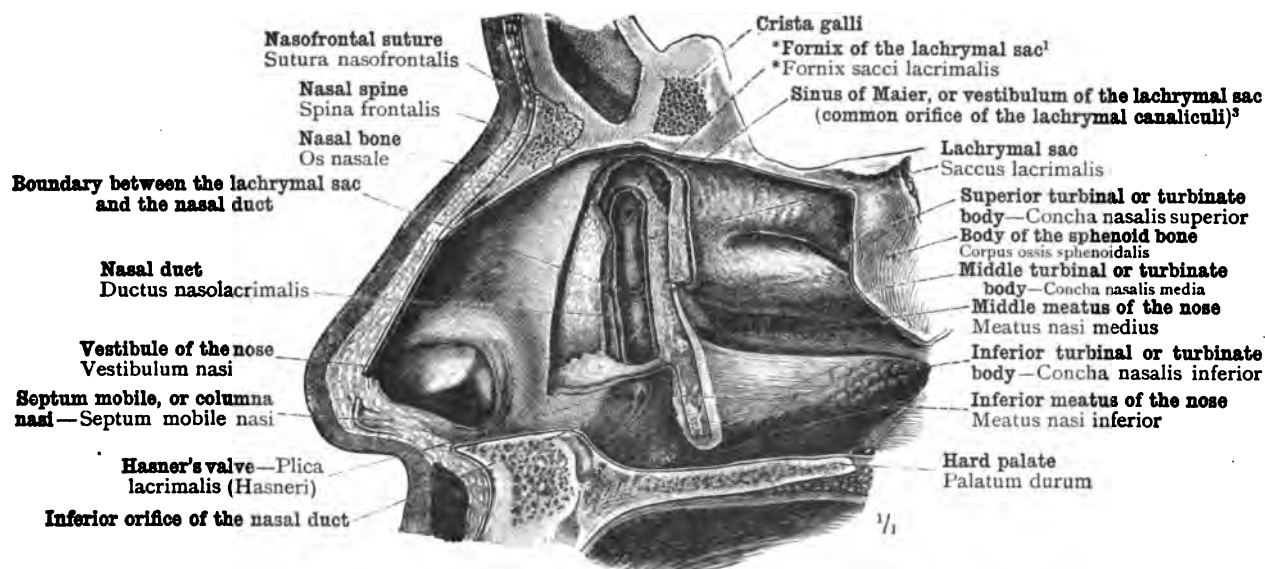


FIG. 1392.—THE LACHRYMAL SAC, SACCUS LACRIMALIS, AND THE NASAL DUCT, DUCTUS NASOLACRIMALIS, OF THE RIGHT SIDE, DISPLAYED FROM THE INTERIOR OF THE NASAL FOSSÆ. THE INFERIOR ORIFICE OF THE NASAL DUCT, IN THE INFERIOR MEATUS OF THE NOSE; HASNER'S VALVE, PLICA LACRIMALIS (HASNERI).

In a sagittally hemisected head, after the removal of the anterior portions of the middle and inferior turbinates or turbinate bodies, as well as the surrounding portions of the nasal mucous membrane (pituitary or Schneiderian membrane), the inner bony wall of the lacrimal groove and the nasal duct was removed as far down as the attachment of the inferior turbinate bone of the nose, so as to expose the lacrimal sac and the nasal duct. These were then both opened by the removal of their inner wall.

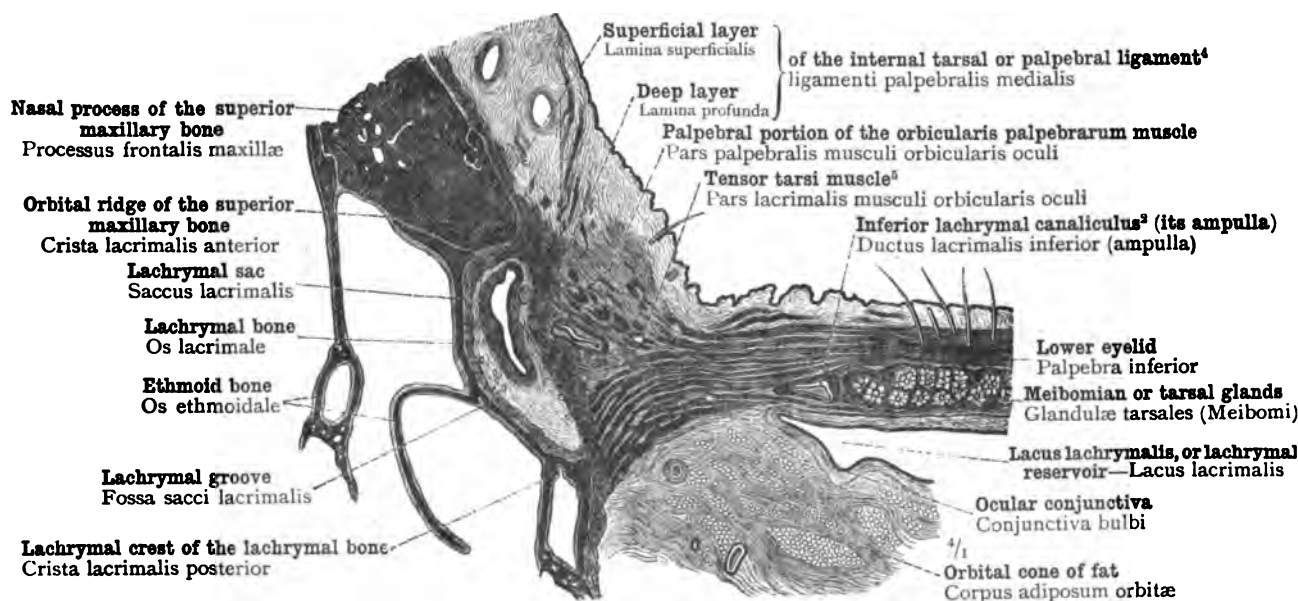


FIG. 1393.—HORIZONTAL SECTION THROUGH THE LACHRYMAL SAC AND THE MARGINAL PORTION OF THE LOWER EYELID. THE INFERIOR LACHRYMAL CANALICULUS (see note ² to p. 912) APPEARS TWICE IN THE SECTION, AND THE SUPERIOR LACHRYMAL CANALICULUS IS CUT ACROSS QUITE NEAR TO THE LACHRYMAL SAC.

¹ See note 3 to p. 912.

² See note ² to p. 912.

³ See Appendix, note 506.

⁴ Known also as the tendon of the orbicularis muscle, or tendo palpebrarum.

⁵ Known also as Horner's muscle (musculus Horneri), and as the musculus sacci lacrimalis. Sometimes also in England called pars lacrimalis musculi orbicularis palpebrarum. See Appendix, note 501.

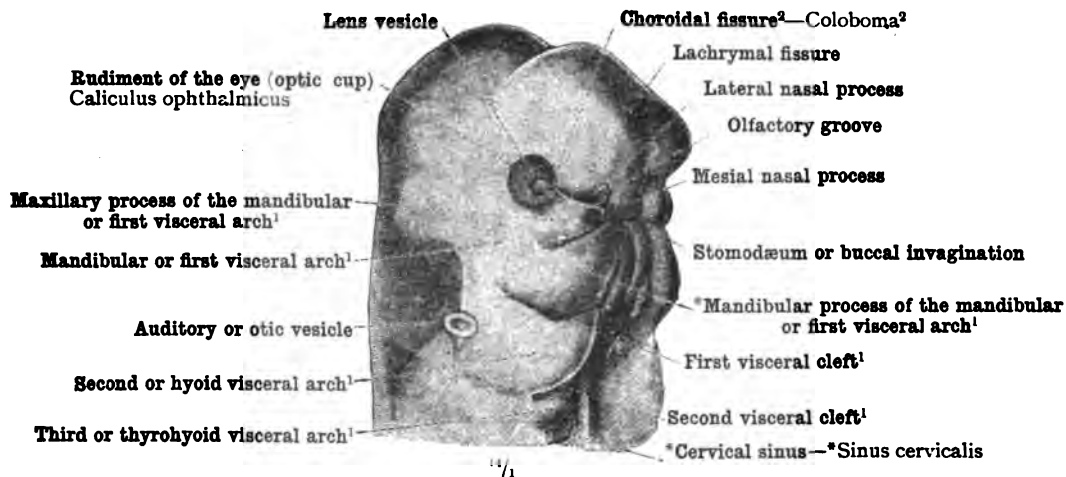


FIG. 1394.—HEAD OF A HUMAN EMBRYO AT OR NEAR THE END OF THE FOURTH WEEK OF INTRA-UTERINE LIFE. SEEN OBliquely FROM BEFORE AND THE RIGHT SIDE.

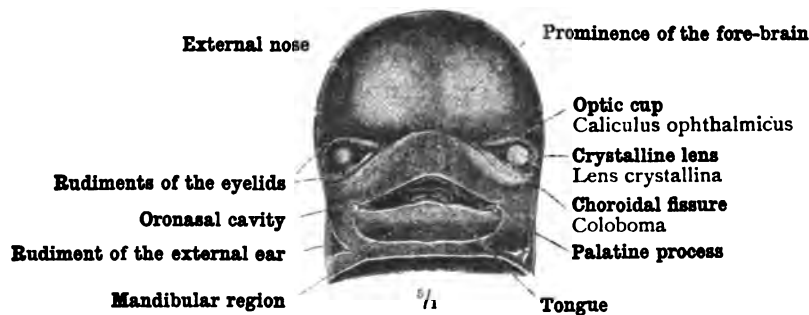


FIG. 1395.—THE HEAD OF A HUMAN EMBRYO AT THE END OF THE SIXTH WEEK OF INTRA-UTERINE LIFE. SEEN FROM BEFORE.

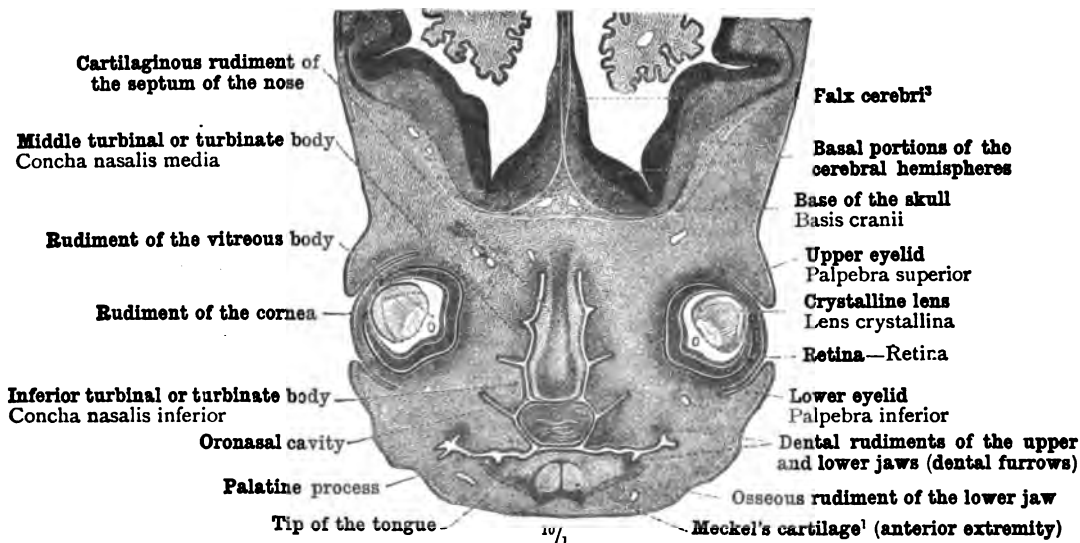


FIG. 1396.—CORONAL SECTION THROUGH THE FACE OF A HUMAN EMBRYO AT THE END OF THE EIGHTH WEEK OF INTRA-UTERINE LIFE.

¹ See Appendix, note 448.

² See Appendix, note 597.

³ Sometimes distinguished as the *falx major*.

Development of the Eye.

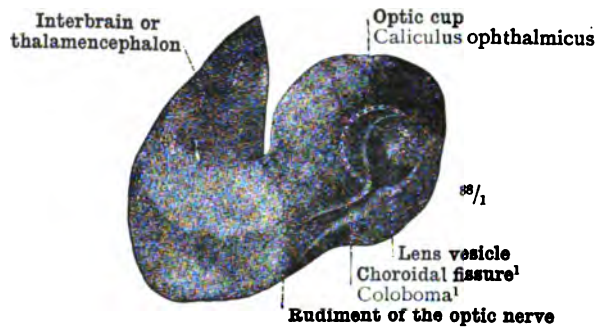


FIG. 1397.—MODEL OF THE OPTIC CUP WITH THE HOLLOW OPTIC STALK, THE LENS VESICLE, AND THE CHOROIDAL FISSURE; FROM A HUMAN EMBRYO OF TWENTY-SEVEN DAYS. (FROM FUCHS AND HOCHSTETTER'S "LEHRBUCH DER AUGENHEILKUNDE".)

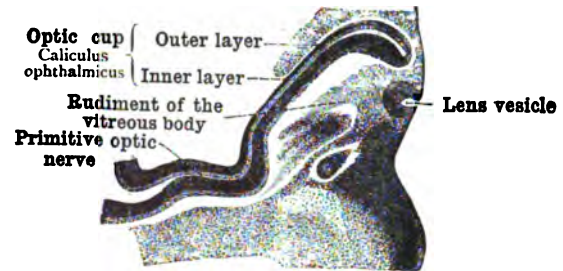


FIG. 1398.—LONGITUDINAL SECTION THROUGH THE OPTIC CUP AND THE RUDIMENT OF THE OPTIC NERVE OF THE EMBRYO DEPICTED IN FIG. 1394. THE SECTION PASSES THROUGH THE CHOROIDAL FISSURE.

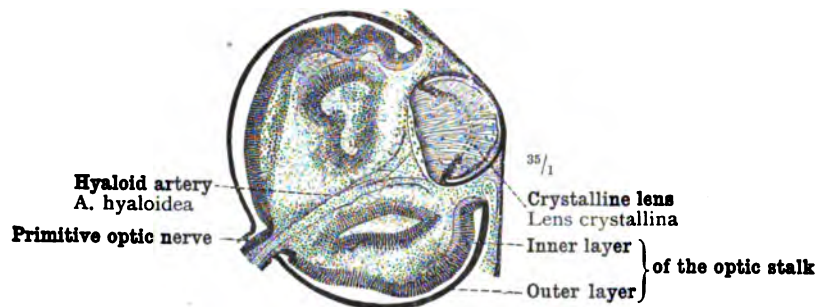


FIG. 1399.—HORIZONTAL SECTION THROUGH THE RIGHT EYE OF THE EMBRYO DEPICTED IN FIG. 1395. THE OPTIC CUP, CALICULUS OPHTHALMICUS, IN A LATER STAGE OF DEVELOPMENT.

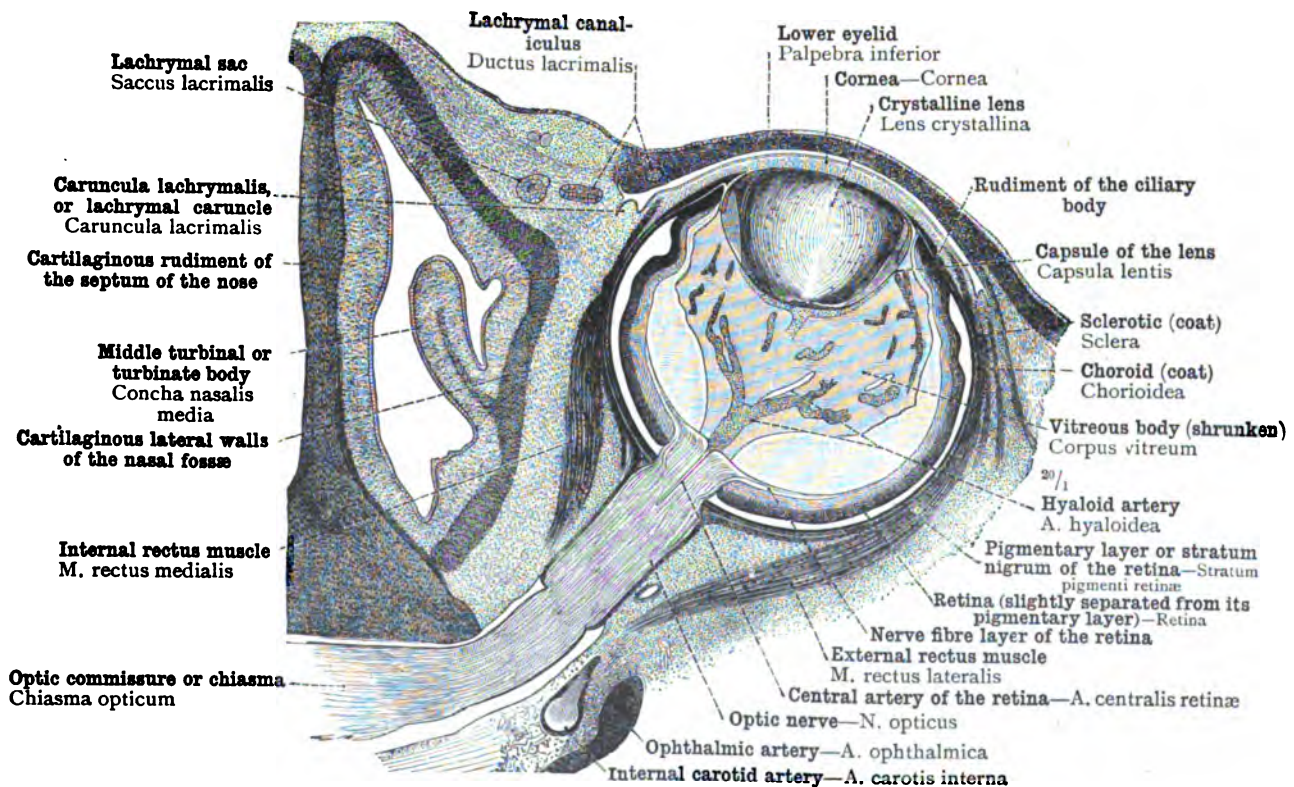


FIG. 1400.—HORIZONTAL SECTION THROUGH THE RIGHT EYE AND A PART OF THE NASAL FOSSÆ OF A HUMAN EMBRYO OF NINE WEEKS.

¹ See Appendix, note 507.

Development of the Eye.

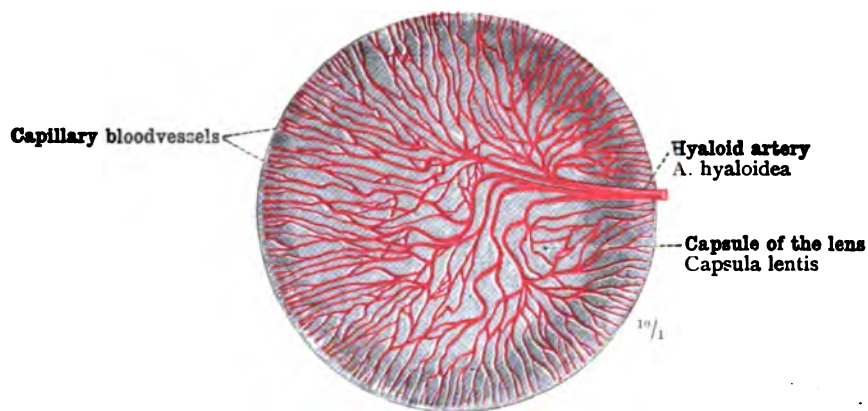


FIG. 1401.—THE RAMIFICATION OF THE HYALOID ARTERY, ARTERIA HYALOIDEA, ON THE POSTERIOR SURFACE OF THE LENS. FROM A HUMAN EMBRYO AT THE END OF THE FOURTH MONTH OF INTRA-UTERINE LIFE (MONTHS OF FOUR WEEKS EACH).

The bloodvessels have been injected.

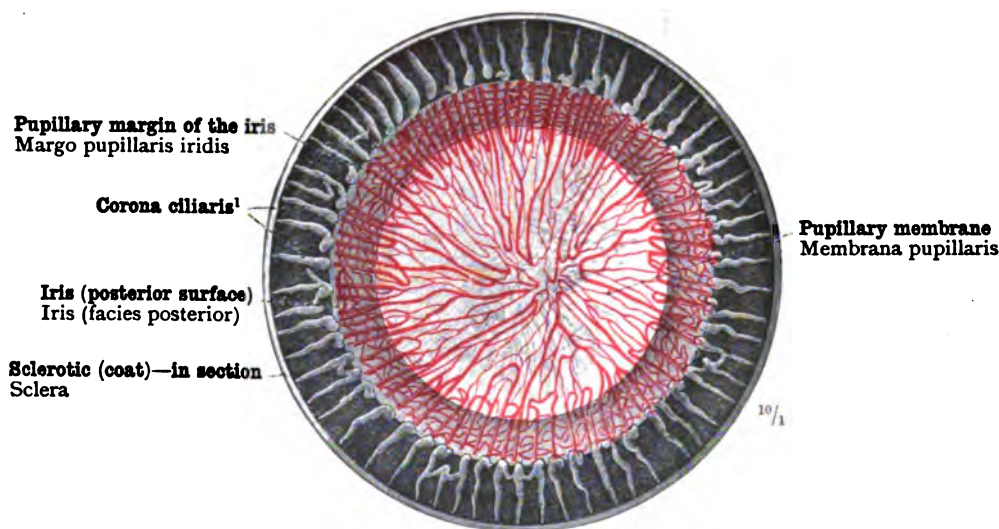


FIG. 1402.—THE BLOODVESSELS OF THE PUPILLARY MEMBRANE, MEMBRANA PUPILLARIS, AND OF THE IRIS FROM A HUMAN EMBRYO AT THE END OF THE SIXTH MONTH OF INTRA-UTERINE LIFE (MONTHS OF FOUR WEEKS EACH).

The bloodvessels have been injected.

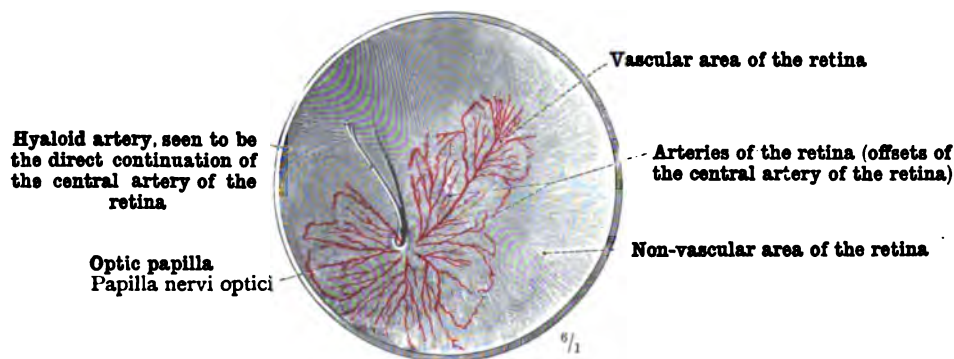


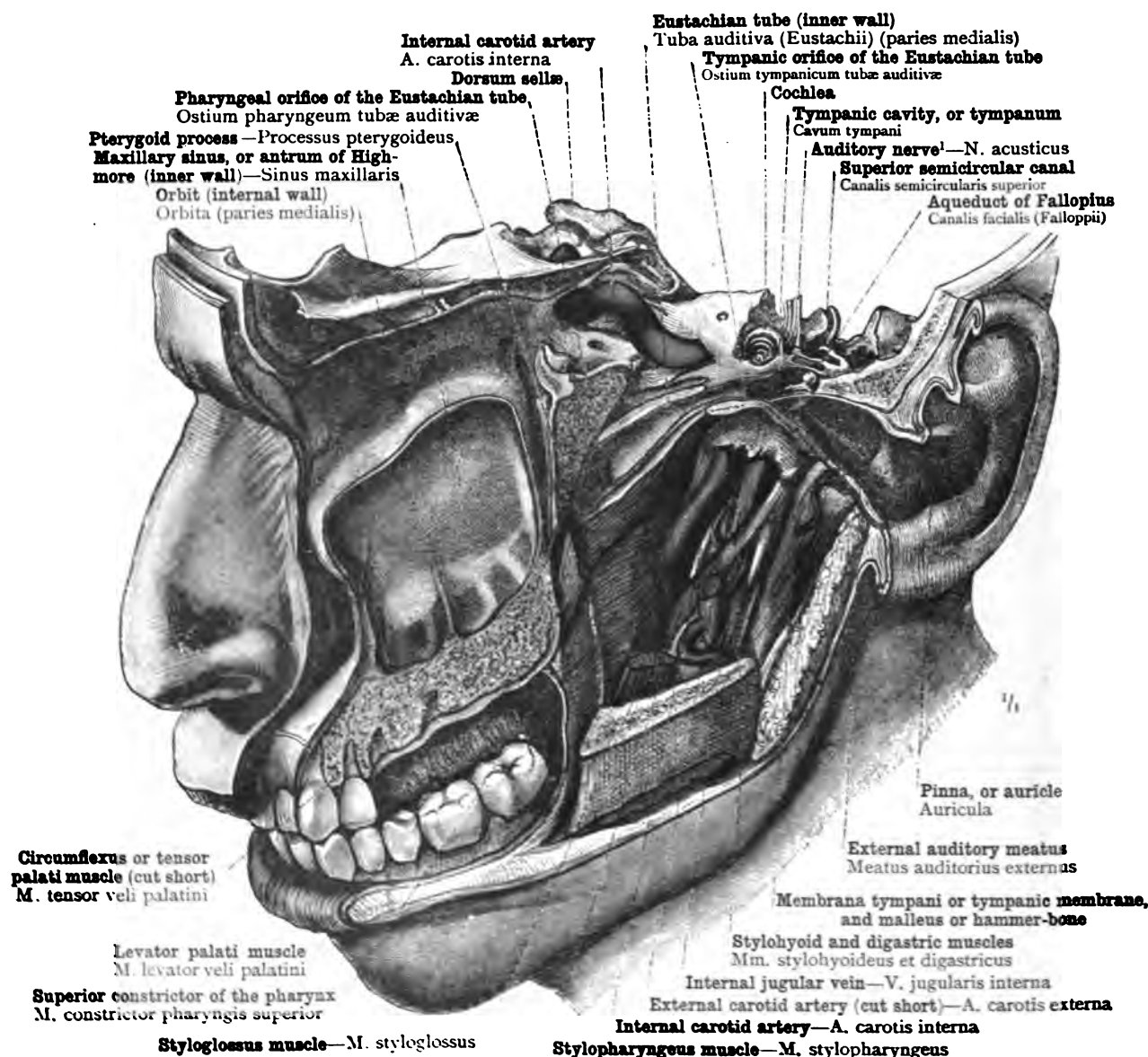
FIG. 1403.—THE OBLITERATED HYALOID ARTERY, ARTERIA HYALOIDEA, PASSING FREELY FORWARDS FROM THE CENTRE OF THE OPTIC PAPILLA, AND DISPLAYED BY THE REMOVAL OF THE VITREOUS BODY. THE VASCULAR SYSTEM OF THE RETINA. POSTERIOR SEGMENT OF THE EYEBALL OF A NEW-BORN KITTEN, SEEN FROM BEFORE.

The bloodvessels have been injected.

¹ See Appendix, note 485.

ORGANON AUDITUS

THE EAR

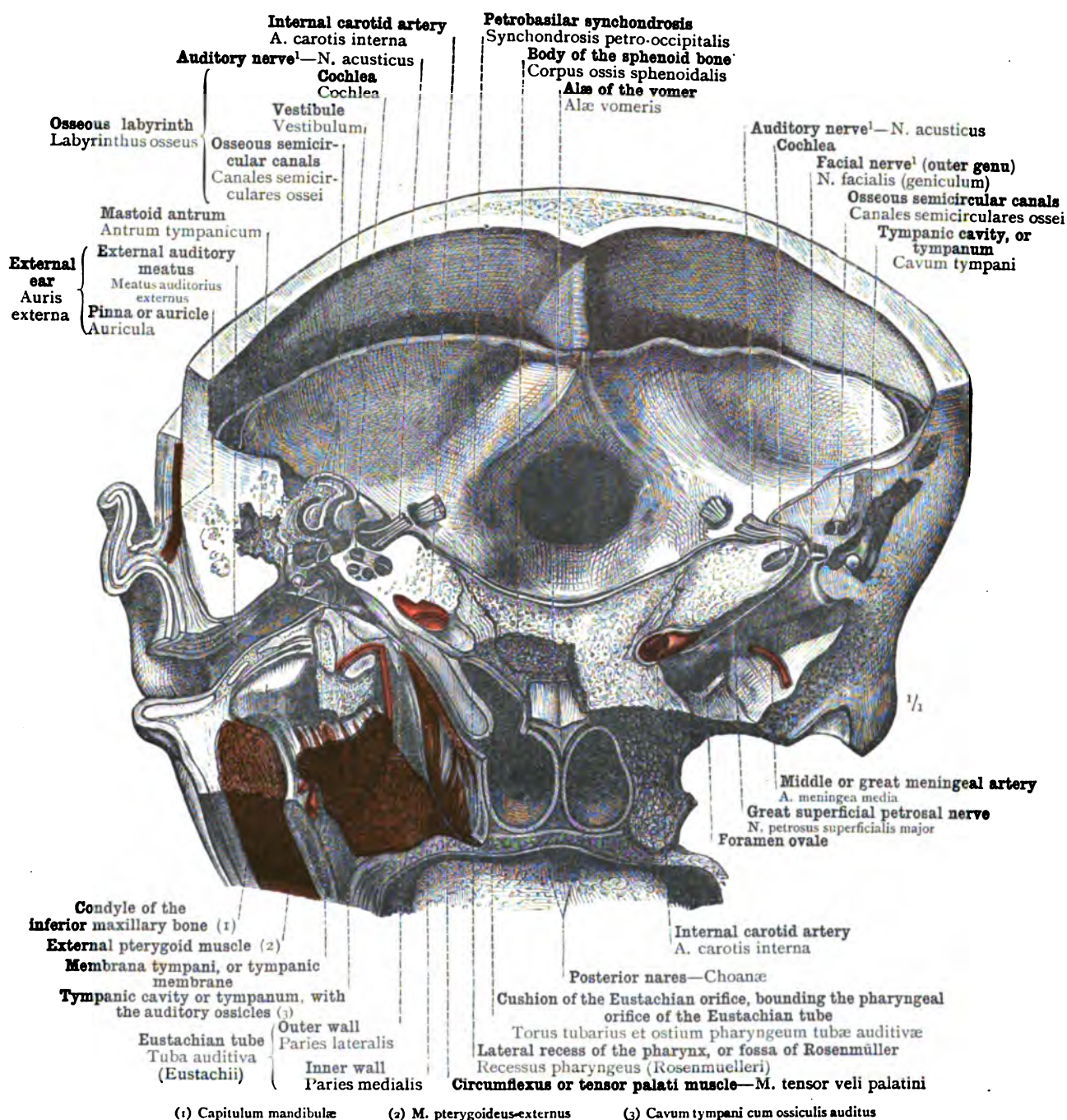


¹ Eighth cranial nerve in Soemmerring's enumeration; *portio mollis* of the seventh cranial nerve in that of Willis.

FIG. 1404.—GENERAL VIEW OF THE THREE PARTS OF THE ORGAN OF HEARING, SHOWING THEIR RELATIONS. SEEN FROM THE LEFT SIDE AND BEFORE. THE EXTERNAL EAR, *AURIS EXTERNA*: THE PINNA OR AURICLE, *AURICULA*, THE EXTERNAL AUDITORY MEATUS, *MEATUS AUDITORIUS EXTERNUS*, AND THE TYMPANIC MEMBRANE, *MEMBRANA TYMPANI*. THE MIDDLE EAR, *AURIS MEDIA*: THE TYMPANIC CAVITY OR TYMPANUM, *CAVUM TYMPANI*, AND THE EUSTACHIAN TUBE, *TUBA AUDITIVA (EUSTACHII)*. THE INTERNAL EAR, *AURIS INTERNA*: THE LABYRINTH, *LABYRINTHUS (AURIS)*, AND THE AUDITORY NERVE, *NERVUS ACUSTICUS*.

In a head hardened in alcohol a sagittal section was first made through the left superior maxillary bone and the left orbit, which behind, passing between the foramen rotundum and the foramen ovale, cut across the root of the great wing of the sphenoid and the internal pterygoid plate. The left ramus of the inferior maxillary bone having been cut away, a second section was made through the external auditory meatus and the tympanum, passing in front of the Eustachian tube and as far as the foramen lacerum medium; the Eustachian tube itself was opened by the removal of its outer wall as far as the pharyngeal orifice of the tube. The parts of the osseous labyrinth were exposed with the chisel.

General View of the Organ of Hearing.



¹ In Soemmerring's enumeration the *facial* is the *seventh*, the *auditory* is the *eighth cranial nerve*; in that of Willis the former is the *portio dura*, the latter the *portio mollis*, of the *seventh cranial nerve*.

FIG. 1405.—GENERAL VIEW OF THE THREE PARTS OF THE ORGAN OF HEARING. SEEN FROM ABOVE

In a head hardened in chromic acid and alcohol, after the roof of the skull had been removed in the usual manner, a coronal section was made, passing through the hindmost part of the nasal septum and the foremost part of the soft palate. On the right side, by a saw-cut passing obliquely forwards, the parts of the organ of hearing situated in the petrous portion of the temporal bone were then fully opened, and the upper wall of the cartilaginous portion of the Eustachian tube was removed up to the opening of the tube into the nasopharynx. On the left side of the body the uppermost part of the petrous portion of the temporal bone with the roof of the tympanum was now removed.



FIG. 1406.—THE LEFT PINNA OR AURICLE, AURICULA, OF A YOUNG WOMAN. OUTER SURFACE. HELIX AND ANTIHELIX¹; TRAGUS AND ANTITRAGUS; CONCHA (OF THE AURICLE), CONCHA AURICULÆ; LOBULE OR LOBE (OF THE EAR), LOBULUS AURICULÆ.

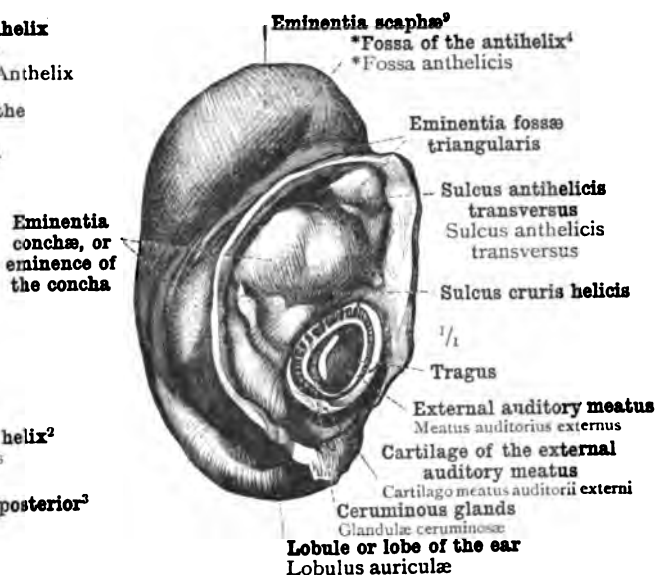


FIG. 1407.—THE INNER SURFACE OF THE SAME AURICLE.

The auricle was separated from the head along its line of attachment to the latter, and the cartilaginous portion of the external auditory meatus was cut across.



FIG. 1408.—THE LEFT PINNA OR AURICLE OF AN OLD MAN. OUTER SURFACE. *TRAGI⁷; EAR-POINT OR TUBERCLE OF DARWIN, TUBERCULUM AURICULÆ.⁵

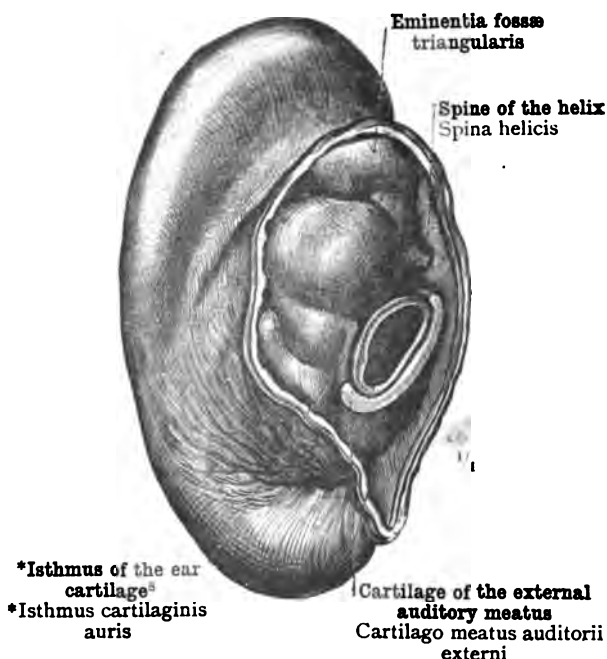


FIG. 1409.—THE INNER SURFACE OF THE SAME AURICLE.

The auricle was separated in the manner described at the foot of Fig. 1407.

¹ The spelling *anthelix* is used sometimes in England also.

² These terms are used neither by Quain nor by Macalister. Their application is indicated by the figure.

³ See Appendix, note 509.

⁴ Sometimes called *Woolner's tip*, Darwin's attention having been drawn to this prominence by the sculptor Woolner.

⁵ A rounded prominence sometimes met with on the upper part of the tragus.

⁶ The name of **tragi* is given to the short, stiff hairs with which the entrance to the external auditory meatus is sometimes beset in elderly persons. The term is, however, rarely used in England.

⁷ This term is not used by Quain or Macalister. Examination of Fig. 1409 will show its signification.

⁸ The *eminencia scaphæ* is the eminence on the inner surface of the auricle corresponding to the *fossa of the helix* or *scapha* on the outer surface.

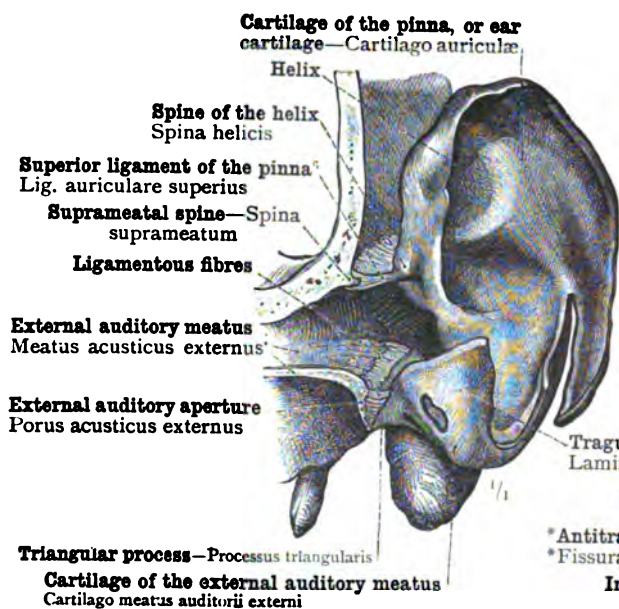


FIG. 1410.—THE CARTILAGE OF THE PINNA, OR EAR CARTILAGE, AND THE CARTILAGE OF THE EXTERNAL AUDITORY MEATUS, IN CONNEXION WITH THE TYMPANIC PORTION OF THE TEMPORAL BONE. LEFT EAR. OUTER SURFACE. SEEN FROM BEFORE.

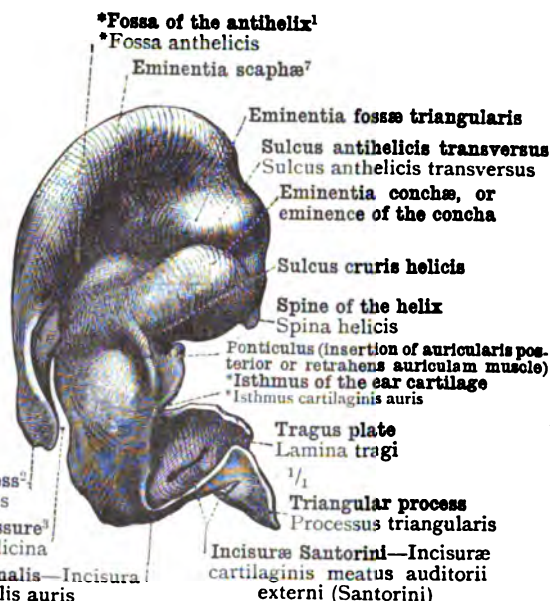


FIG. 1411.—THE CARTILAGE OF THE PINNA, OR EAR CARTILAGE, AND THE CARTILAGE OF THE EXTERNAL AUDITORY MEATUS, CARTILAGO AURICULÆ ET CARTILAGO MEATUS AUDITORII EXTERNI. LEFT EAR. INNER SURFACE. SEEN FROM BEHIND.

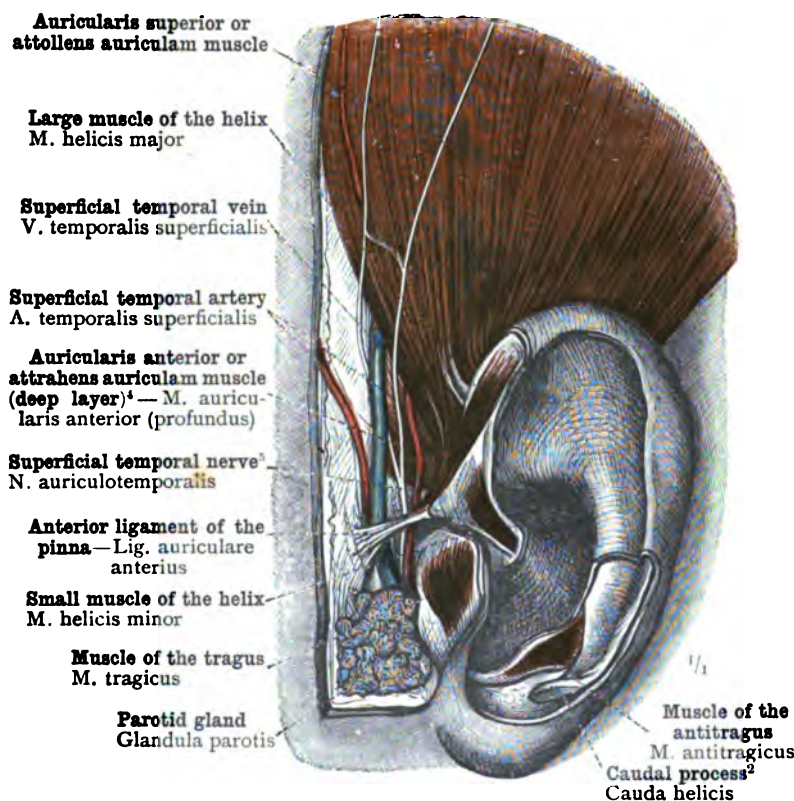


FIG. 1412.—THE MUSCLES (EXTRINSIC AND INTRINSIC) ON THE OUTER SURFACE OF THE PINNA OR AURICLE. LEFT EAR.



FIG. 1413.—THE MUSCLES (EXTRINSIC AND INTRINSIC) ON THE INNER SURFACE OF THE PINNA OR AURICLE. LEFT EAR.

¹ See Appendix, note 509.

² See Appendix, note 510.

³ Quain enumerates *anterior* and *posterior* ligaments only, making no mention of the *superior* ligament of the pinna.

⁴ See note 9 to p. 920.

⁵ By Macalister named *cauda helix posterior*.

⁶ See Appendix, note 459.

⁷ This term is not used by Quain or by Macalister.

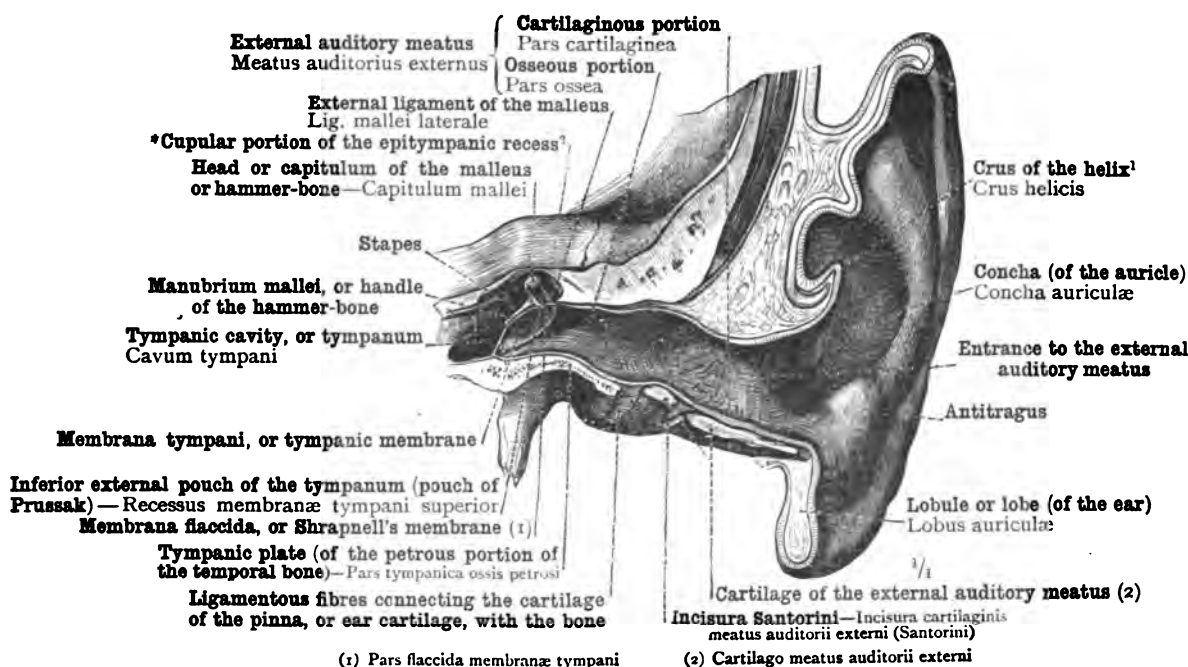


FIG. 1414.—THE LEFT EXTERNAL AUDITORY MEATUS, MEATUS AUDITORII EXTERNUS, WITH THE MEMBRANA TYMPANI OR TYMPANIC MEMBRANE, CUT ACROSS PERPENDICULARLY THROUGHOUT ITS WHOLE LENGTH. THE CARTILAGINOUS AND OSSEOUS PORTIONS OF THE EXTERNAL AUDITORY MEATUS, PARS CARTILAGINEA ET PARS OSSEA MEATUS AUDITORII EXTERNI. THE EXPANSION OF THE EXTERNAL AUDITORY MEATUS INTO THE PINNA OR AURICLE, AND ITS CLOSURE BY THE MEMBRANA TYMPANI. SEEN FROM BEFORE.

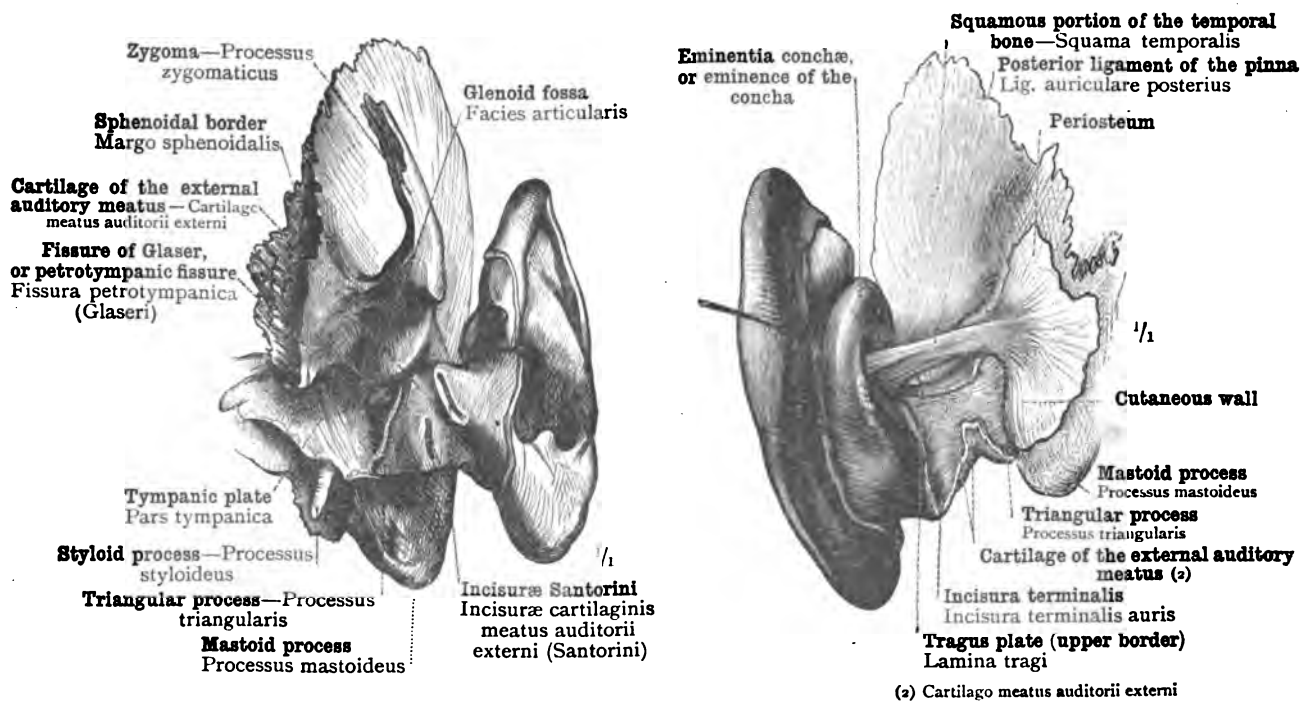


FIG. 1415.—THE WALL OF THE OSSEOUS AND CARTILAGINOUS PORTIONS OF THE EXTERNAL AUDITORY MEATUS LAID BARE. SEEN FROM BELOW AND BEFORE. LEFT EAR.

FIG. 1416.—THE WALL OF THE CARTILAGINOUS PORTION OF THE EXTERNAL AUDITORY MEATUS LAID BARE. SEEN FROM BEHIND. LEFT EAR.

* See Appendix, note 508.

* See Appendix, note 511.

Auris externa—The external ear.—Meatus auditorius externus—The external auditory meatus.

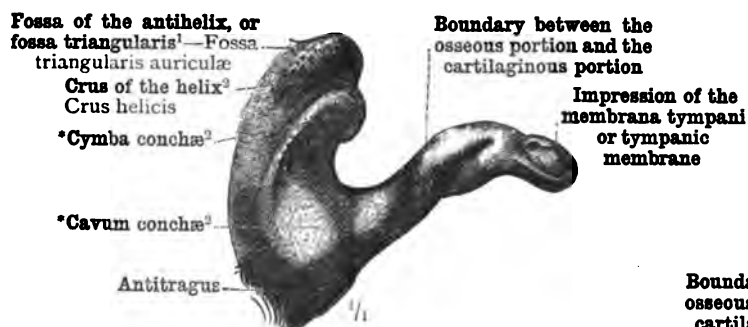


FIG. 1417.—SEEN FROM BEHIND.

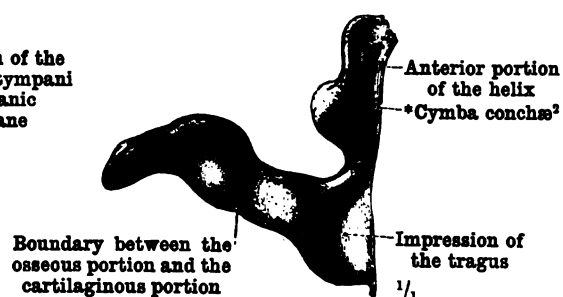


FIG. 1418.—SEEN FROM BEFORE.

CAST OF THE LEFT EXTERNAL AUDITORY MEATUS AND THE ADJOINING PORTIONS OF THE PINNA OR AURICLE, TAKEN WITH FUSIBLE METAL. SHAPE AND DIMENSIONS OF THE EXTERNAL AUDITORY MEATUS.

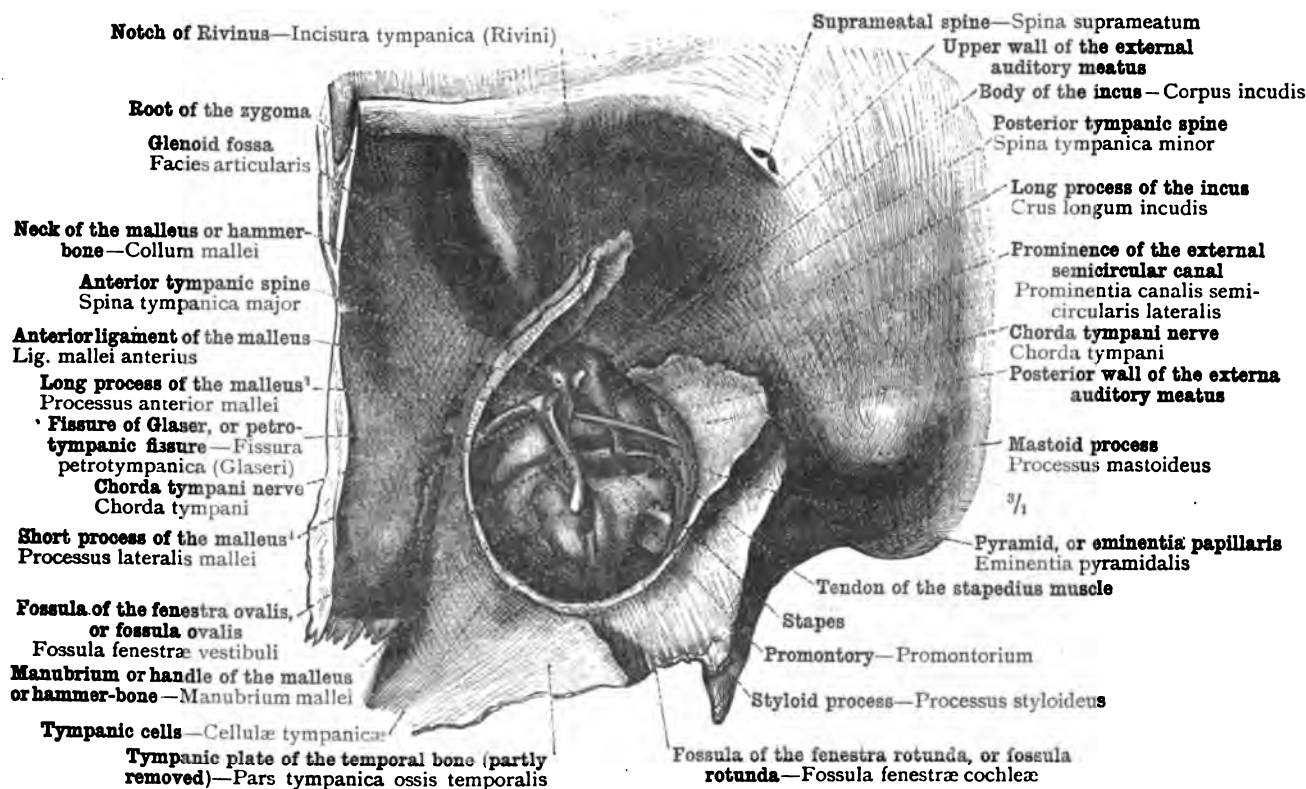


FIG. 1419.—THE INNERMOST PORTION OF THE EXTERNAL AUDITORY MEATUS AND THE RELATION HERETO OF THE STRUCTURES IN THE TYMPANIC CAVITY OR TYMPANUM, DISPLAYED BY THE REMOVAL OF THE GREATER PART OF THE EXTERNAL AUDITORY MEATUS AND OF THE MEMBRANA TYMPANI OR TYMPANIC MEMBRANE. VIEW INTO THE TYMPANIC CAVITY OR TYMPANUM; THE THREE AUDITORY OSSICLES ARE SEEN IN THEIR NATURAL POSITION; THE TENDON OF THE STAPEDIUS MUSCLE AND THE CHORDA TYMPANI NERVE ARE ALSO VISIBLE, AS WELL AS THE PARTS ON THE INNER WALL, PARIETES LABYRINTHICUS, OF THE TYMPANIC CAVITY. LEFT EAR.

¹ See Appendix, note 509.

² See Appendix, note 508.

³ Also called *processus gracilis* vel *Folianus mallei*.⁴ Also called *processus brevis* vel *obtusus mallei*.

Auris externa—The external ear.—**Meatus auditorius externus**—The external auditory meatus.

THE ORGANS OF THE SENSES—THE EAR

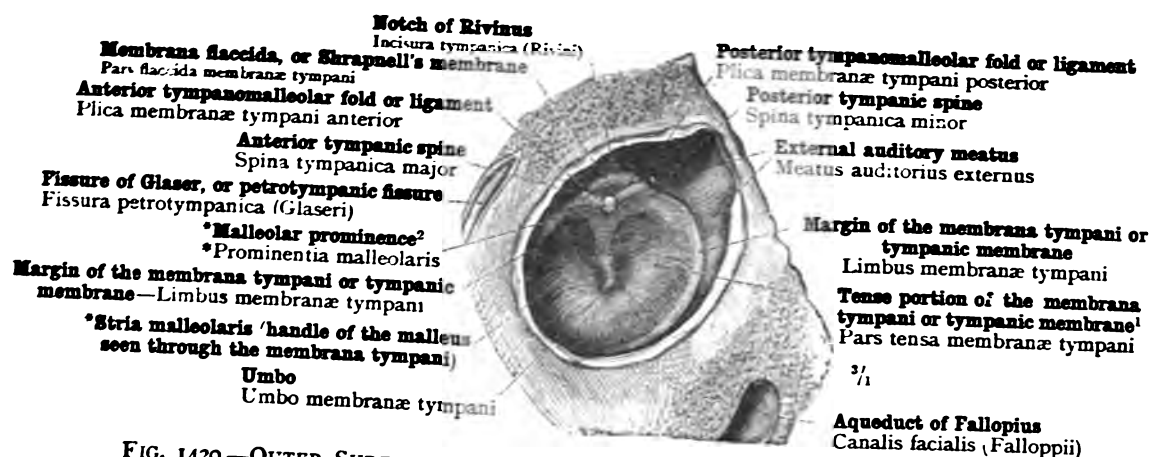


FIG. 1420.—OUTER SURFACE OF THE LEFT MEMBRANA TYMPANI OR TYMPANIC MEMBRANE. The external auditory meatus has been removed by a saw-cut passing close to the tympanic membrane in a plane parallel to the plane of that membrane.

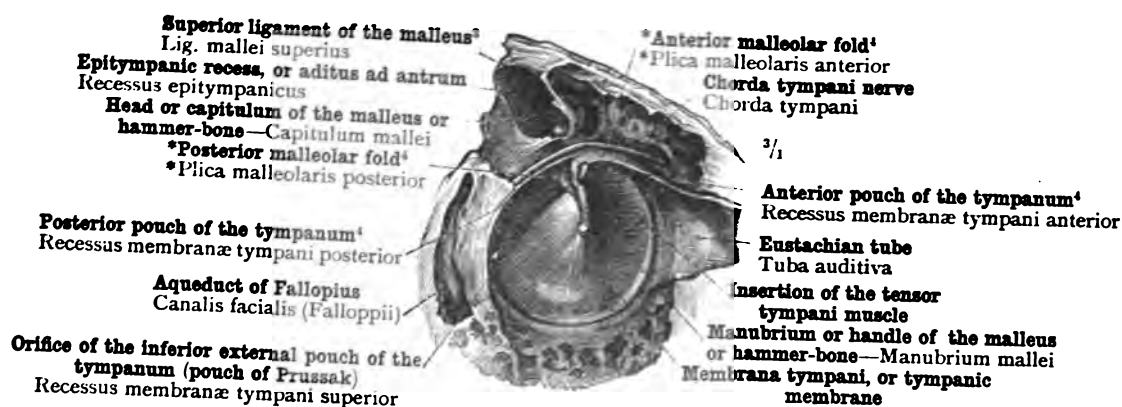


FIG. 1421.—INNER OR TYMPANIC SURFACE OF THE LEFT MEMBRANA TYMPANI OR TYMPANIC MEMBRANE, WITH THE ANTERIOR AND POSTERIOR TYMPANIC POUCHES (OF TRÖLTSCHE), RECESSUS MEMBRANÆ TYMPANI ANTERIOR ET POSTERIOR.

Displayed by a saw-cut traversing the tympanum close to the tympanic membrane in a plane parallel to the plane of that membrane, and by the removal of the incus.

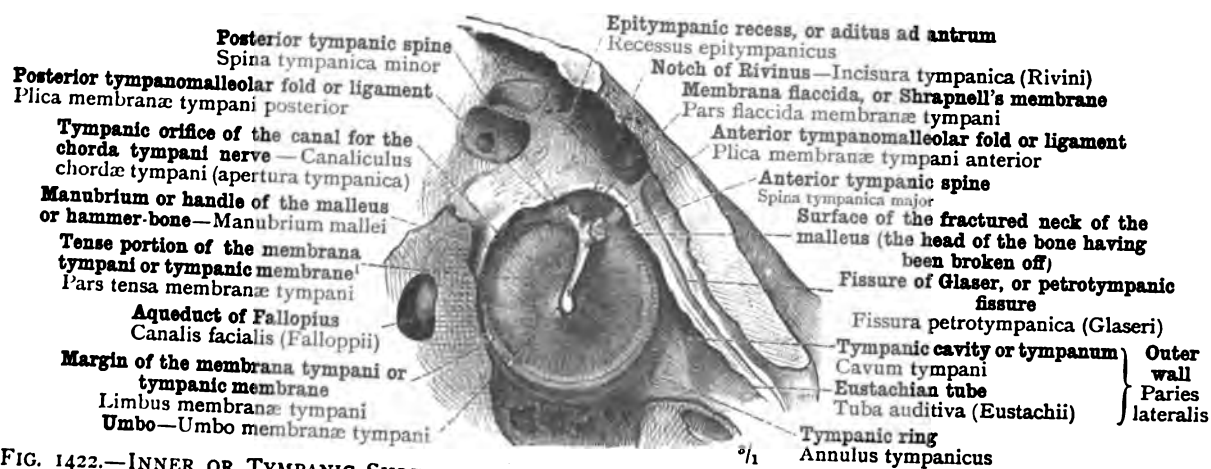


FIG. 1422.—INNER OR TYMPANIC SURFACE OF THE LEFT MEMBRANA TYMPANI OR TYMPANIC MEMBRANE. In order to lay bare the membrana flaccida (pars flaccida membranæ tympani) the head of the malleus was removed, together with the adjoining folds of mucous membrane.

¹ See Appendix, note 512.

² See Appendix, note 513.

³ Sometimes called the *suspensory ligament of the malleus*.

⁴ See Appendix, note 514.

Auris externa—The external ear.—Membrana tympani—The tympanic membrane.

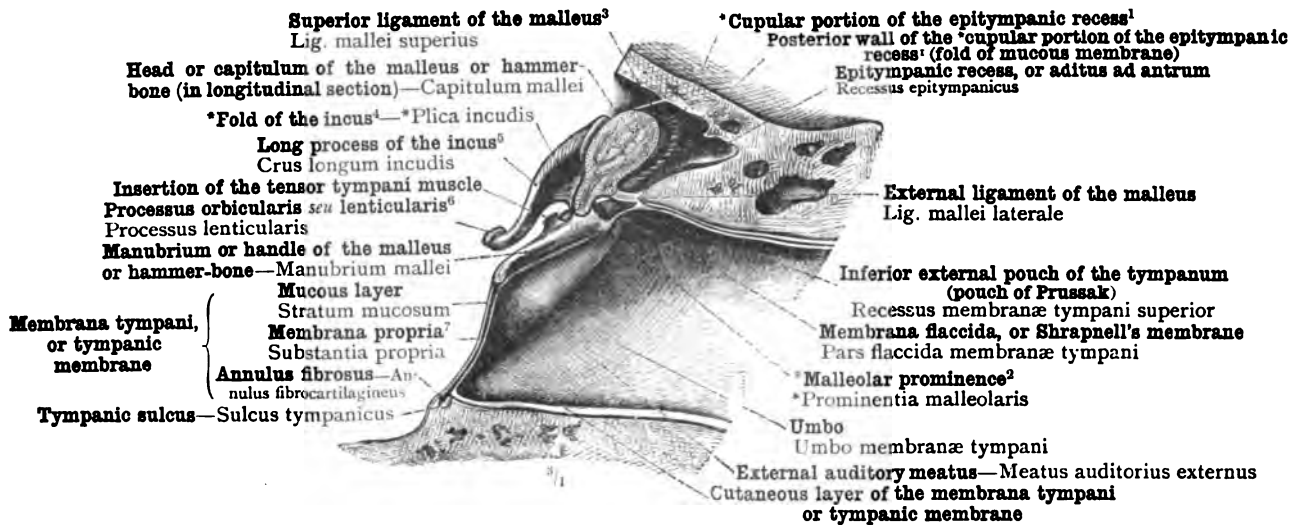


FIG. 1423.—CORONAL SECTION THROUGH THE LEFT MEMBRANA TYMPANI OR TYMPANIC MEMBRANE AND THE ADJOINING PORTION OF THE EXTERNAL AUDITORY MEATUS, IN A SPECIMEN FIRST HARDENED IN CHROMIC ACID AND ALCOHOL AND SUBSEQUENTLY DECALCIFIED IN HYDROCHLORIC ACID. THE SECTION PASSES THROUGH THE HEAD OR CAPITULUM OF THE MALLEUS OR HAMMER-BONE, AND LEAVES THE MANUBRIUM OR HANDLE OF THAT BONE INTACT BEHIND THE PLANE OF SECTION. SEEN FROM BEFORE. THE MUCOUS MEMBRANE OF THE RECESSUS EPITYMPANICUS OR ADITUS AD ANTRUM.

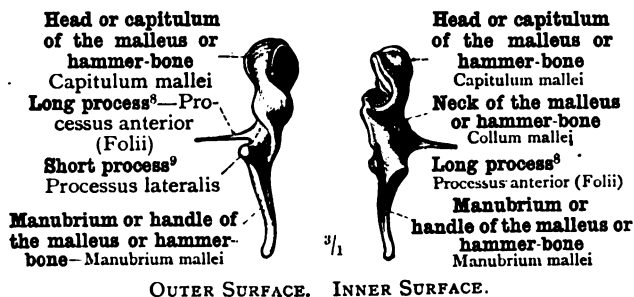


FIG. 1424.—THE LEFT MALLEUS OR HAMMER-BONE.

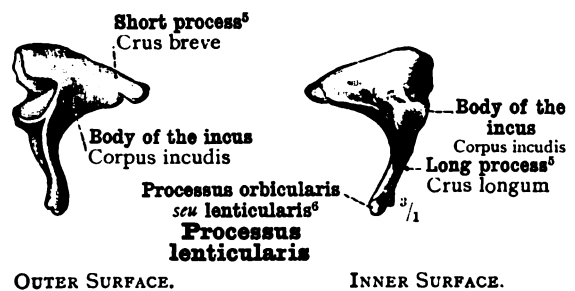


FIG. 1425.—THE LEFT INCUS.

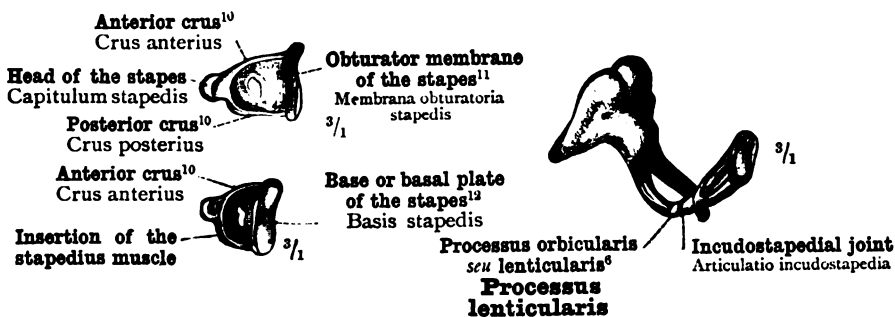


FIG. 1426.—THE LEFT STAPES, WITH THE OBTURATOR MEMBRANE,¹¹ SEEN OBliquely FROM THE UPPER AND INNER SIDE.

FIG. 1427.—THE AUDITORY OSSICLES OF THE LEFT EAR, SEEN FROM BEHIND IN THEIR NATURAL POSITION.



FIG. 1428.—THE AUDITORY OSSICLES OF THE LEFT EAR, SEEN FROM ABOVE IN THEIR NATURAL POSITION.

¹ See Appendix, note 511.

² See Appendix, note 513.

⁴ See Appendix, note 515.

³ Sometimes called the *suspensory ligament of the malleus*.

⁵ The processes of the incus are often known in England by their Latin names of *crus longum* and *crus breve*.

⁶ See Appendix, note 516.

⁷ See Appendix, note 517.

⁸ Also known as the *processus gracilis vel foliatus*.

⁹ Also known as the *processus brevis vel obtusus*.

¹⁰ See Appendix, note 518.

¹¹ See Appendix, note 519.

¹² Sometimes called the *foot-plate of the stapes*.

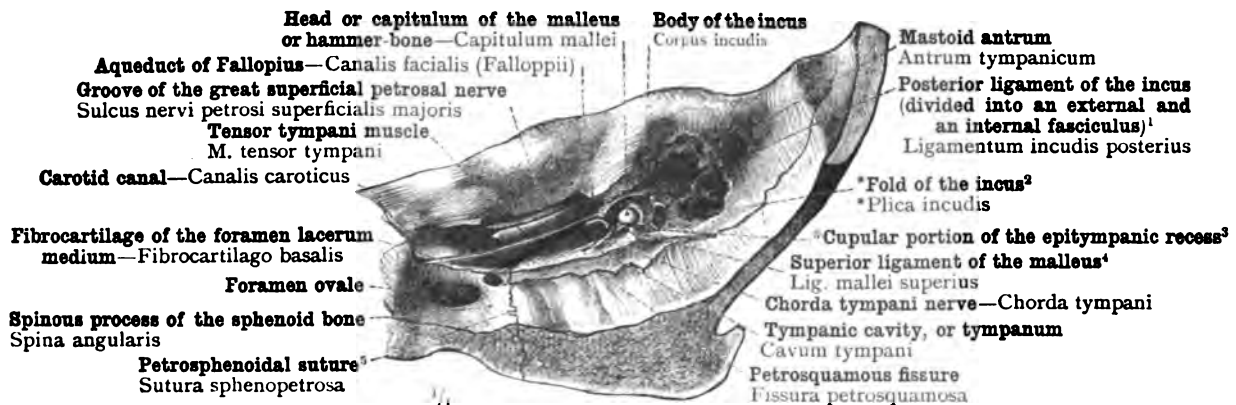


FIG. 1429.—THE LEFT TYMPANIC CAVITY OR TYMPANUM, CAVUM TYMPANI, OPENED BY THE REMOVAL OF ITS ROOF,⁶ PARIES TEGMENTALIS. SEEN FROM ABOVE. TENSOR TYMPANI MUSCLE.

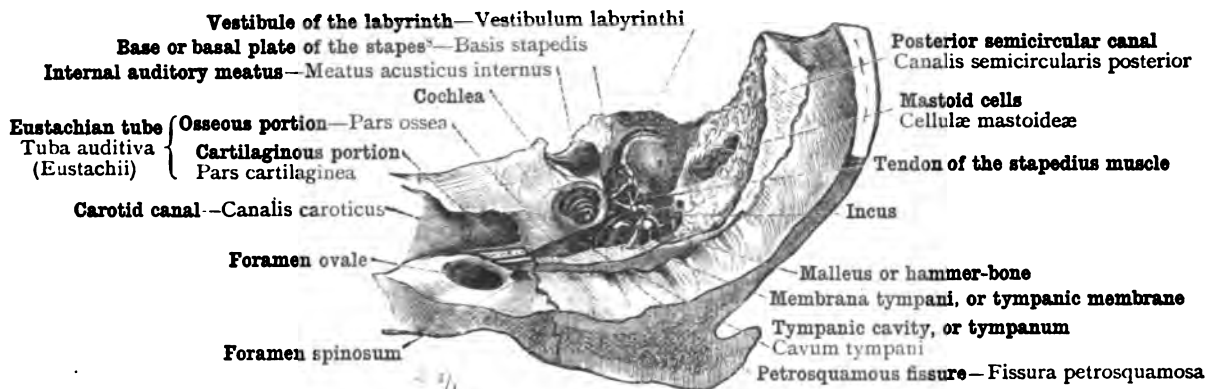


FIG. 1430.—THE LEFT TYMPANUM OR TYMPANIC CAVITY, AND ITS RELATION TO THE LABYRINTH, DISPLAYED BY THE REMOVAL OF THE UPPER PART OF THE PETROUS PORTION OF THE TEMPORAL BONE. SEEN FROM ABOVE.

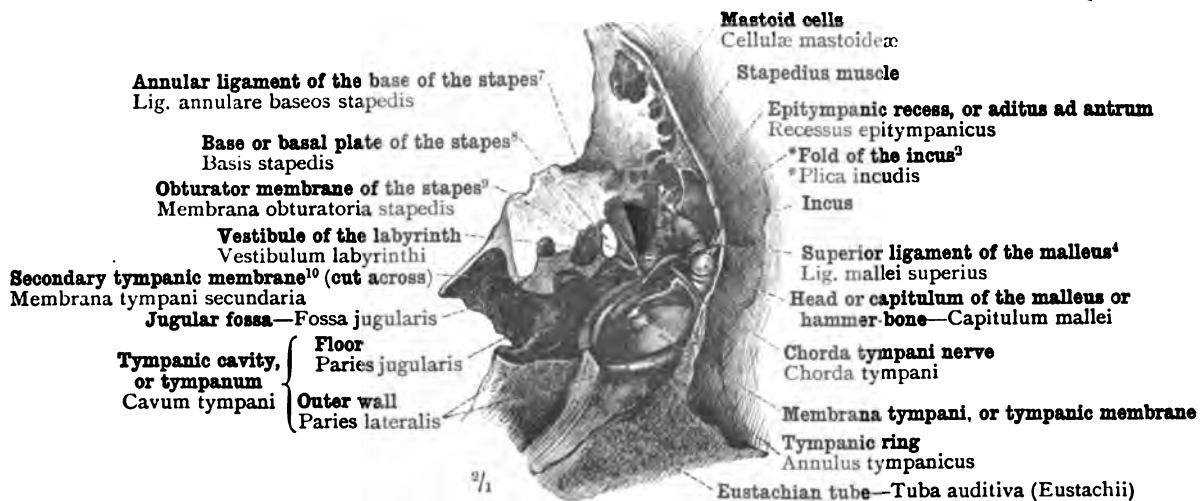


FIG. 1431.—THE LEFT TYMPANUM OR TYMPANIC CAVITY, WITH THE MEMBRANA TYMPANI OR TYMPANIC MEMBRANE, THE AUDITORY OSSICLES, AND THE STAPEDIUS MUSCLE. SEEN FROM ABOVE.

¹ See Appendix, note 520.

² See Appendix, note 515.

³ See Appendix, note 511.

⁶ See Appendix, note 522.

⁴ Known also as the *suspensory ligament of the malleus*.

⁵ See Appendix, note 521.

⁷ Also known as the *membrane of the fenestra ovalis*.

⁸ Also known as the *foot-plate of the stapes*.

⁹ See Appendix, note 519.

¹⁰ See Appendix, note 523.

Auris media—The middle ear.—Cavum tympani—The tympanic cavity or tympanum.

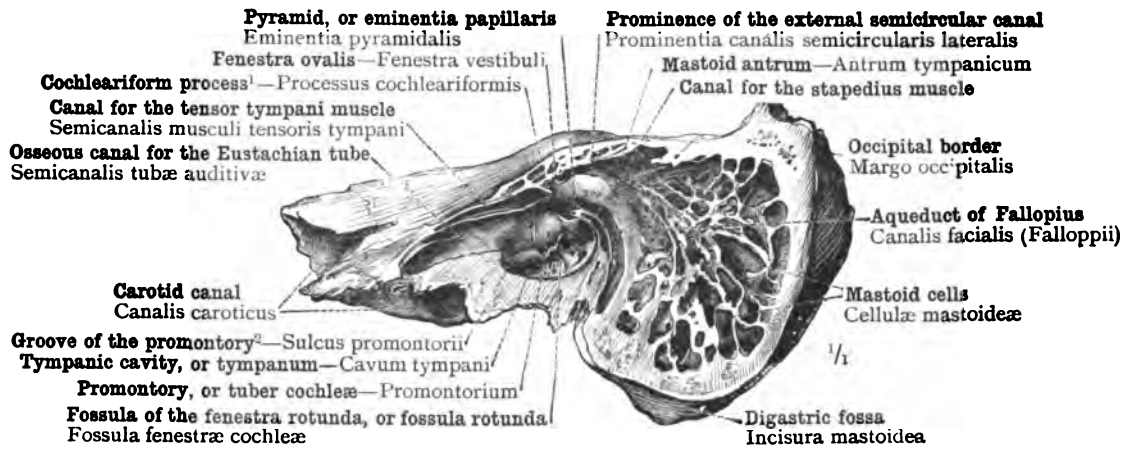


FIG. 1432.—THE INNER WALL, PARIETES LABYRINTHICUS, OF THE LEFT TYMPANIC CAVITY (OSSEOUS SURFACE), AND THE MASTOID CELLS, CELLULÆ MASTOIDEÆ, DISPLAYED BY A SECTION PASSING THROUGH THE MASTOID PROCESS AND THE FRONT OF THE PETROUS PORTION OF THE TEMPORAL BONE. SEEN FROM BEFORE AND THE OUTER SIDE

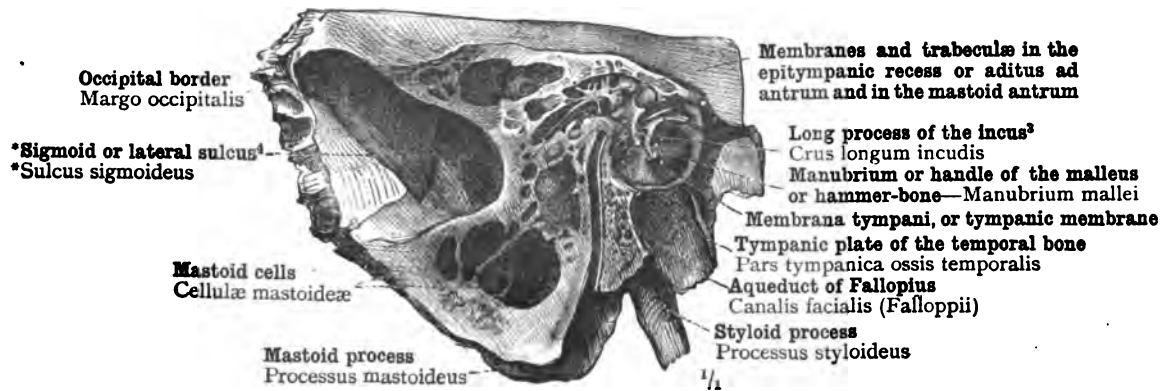


FIG. 1433.—THE OUTER WALL, PARIETES MEMBRANACEUS, OF THE LEFT TYMPANIC CAVITY, AND THE ENTRANCE TO THE MASTOID CELLS. THE MASTOID ANTRUM, ANTRUM TYMPANICUM, IS TRAVERSED BY BRANCHING TRABECULÆ OF CONNECTIVE TISSUE. SEEN FROM THE INNER SIDE.

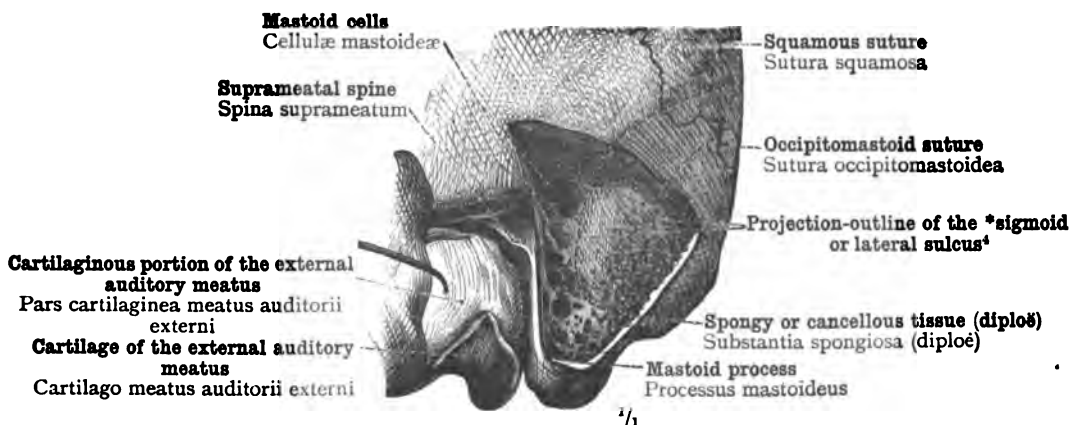


FIG. 1434.—THE MASTOID CELLS IN RELATION TO THE EXTERNAL AUDITORY MEATUS AND TO THE *SIGMOID OR LATERAL SINUS.⁴ THE PROJECTION-OUTLINE OF THE SINUS IS INDICATED BY AN INTERRUPTED LINE. LEFT EAR. SEEN FROM THE OUTER SIDE.

The mastoid cells are in this specimen but slightly developed.

¹ See Appendix, note 524.

² See Appendix, note 525.

³ Often known in England also by the Latin name of *crus longum incudis*.

⁴ Regarding the use of the term *sigmoid sulcus, lodging the *sigmoid sinus, see note ²⁴⁴ to Part V. In Part I. the usual English name of lateral sulcus only was employed (see Fig. 129, p. 62).

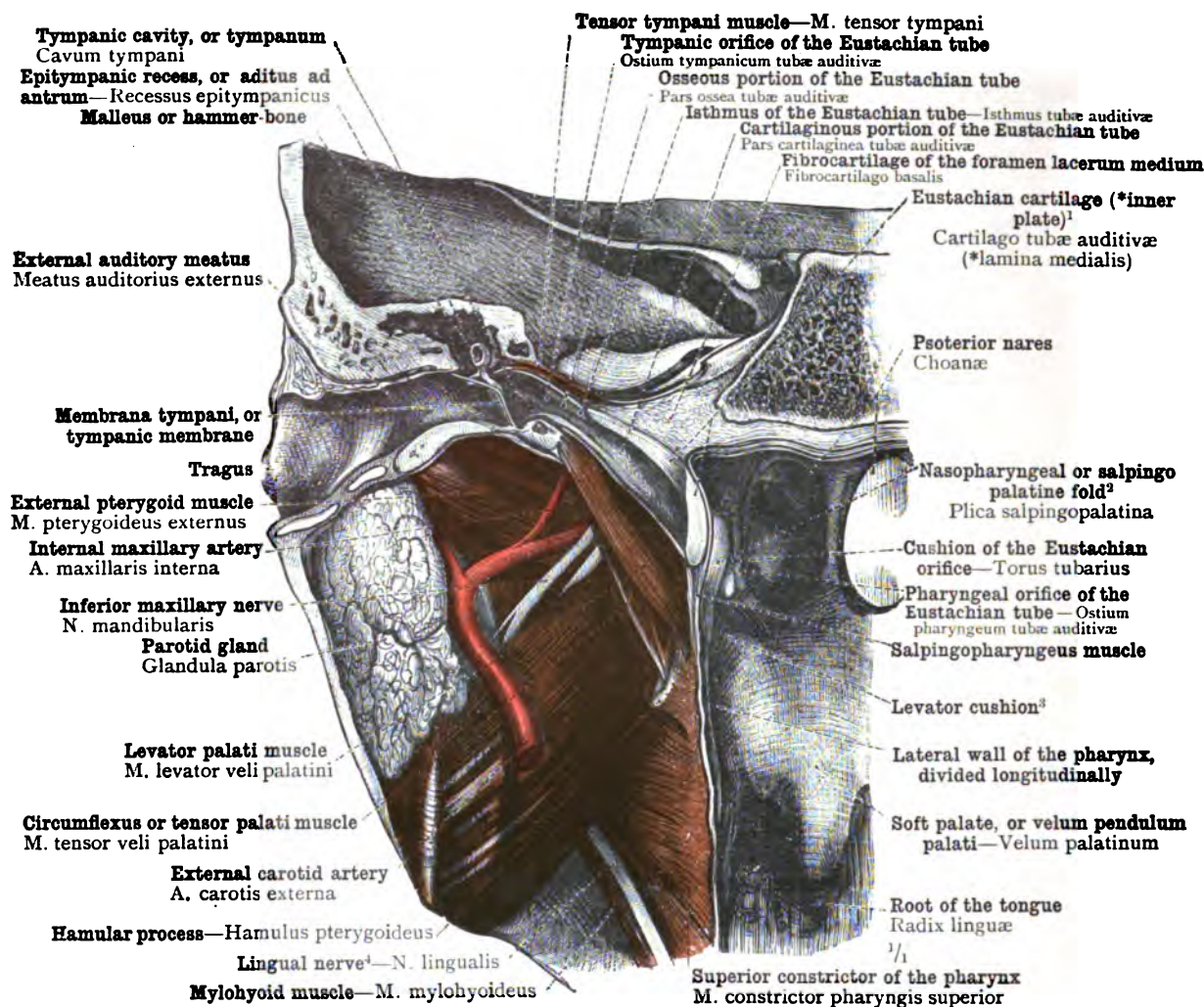
¹ See Appendix, note 526.² See Appendix to Part IV., note 4.³ See Appendix, note 527.⁴ Formerly known also as the *gustatory nerve*.

FIG. 1435.—THE EUSTACHIAN TUBE, TUBA AUDITIVA (EUSTACHII), WITH THE TYMPANIC CAVITY OR TYMPANUM AND THE EXTERNAL AUDITORY MEATUS, SEEN FROM BEHIND.

In the anterior segment of a head divided in the direction of the external auditory meatus, the left Eustachian tube was exposed from behind up to the lateral wall of the pharynx, and was opened by the removal of its inner wall. Of the *inner plate (*see Appendix, note 526*) of the Eustachian cartilage, the uppermost portion only, divided longitudinally, and the foremost portion, which is imbedded in the wall of the pharynx and thus forms the cushion of the Eustachian orifice, torus tubarius, have been preserved. The levator palati muscle, musculus levator veli palatini, the circumflexus, or tensor palati muscle, musculus tensor veli palatini, the superior constrictor of the pharynx, musculus constrictor pharyngis superior, the external and internal pterygoid muscles, musculi pterygoidei, externus and internus, the arteries and nerves passing between the last-named muscles, and the posterior surface of the parotid gland, were then exposed. Finally, the pharynx was opened by the removal of its posterior wall, so that its left lateral wall is seen in longitudinal section, and the cushion of the Eustachian orifice and the pharyngeal orifice of the Eustachian tube, situate just in front of this eminence, are also visible.

Auris media—The middle ear.—Tuba auditiva—The Eustachian tube.

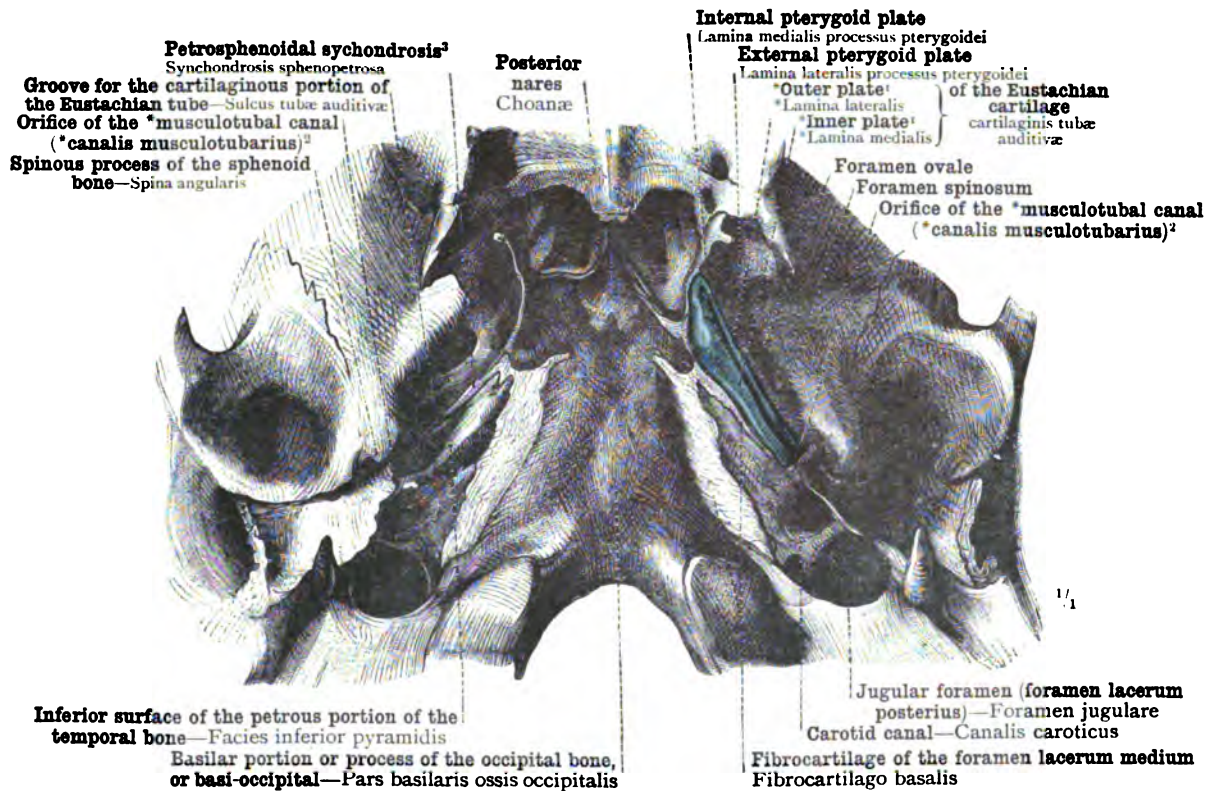


FIG. 1436.—A PART OF THE OUTER OR INFERIOR SURFACE OF THE BASE OF THE SKULL, ON THE LEFT SIDE OF WHICH THE EUSTACHIAN CARTILAGE, CARTILAGO TUBÆ AUDITIVÆ, IS EXPOSED IN ITS NATURAL POSITION AND WITH ITS NATURAL CONNEXIONS WITH THE BONES. ON THE RIGHT SIDE THE GROOVE FOR THE CARTILAGINOUS PORTION OF THE EUSTACHIAN TUBE, SULCUS TUBÆ AUDITIVÆ, IS LAID BARE.

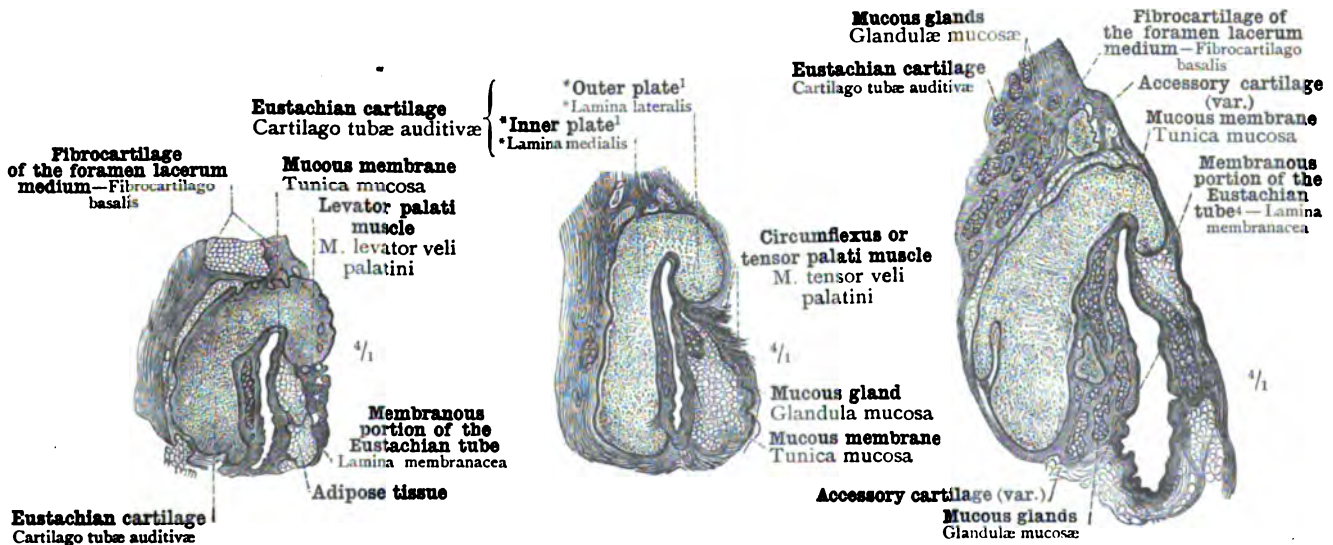


FIG. 1437.—NEAR THE OSSEOUS PORTION.

FIG. 1438.—MIDDLE OF THE CARTILAGINOUS PORTION.

FIG. 1439.—NEAR THE PHARYNGEAL ORIFICE.

TRANSVERSE SECTIONS OF THE CARTILAGINOUS PORTION OF THE EUSTACHIAN TUBE, PARS CARTILAGINEA TUBÆ AUDITIVÆ.

* See Appendix, note 526.

* See Appendix, note 526.

* See Appendix, note 521.

* See Appendix, note 526.

Auris media—The middle ear.—Tuba auditiva—The Eustachian tube.

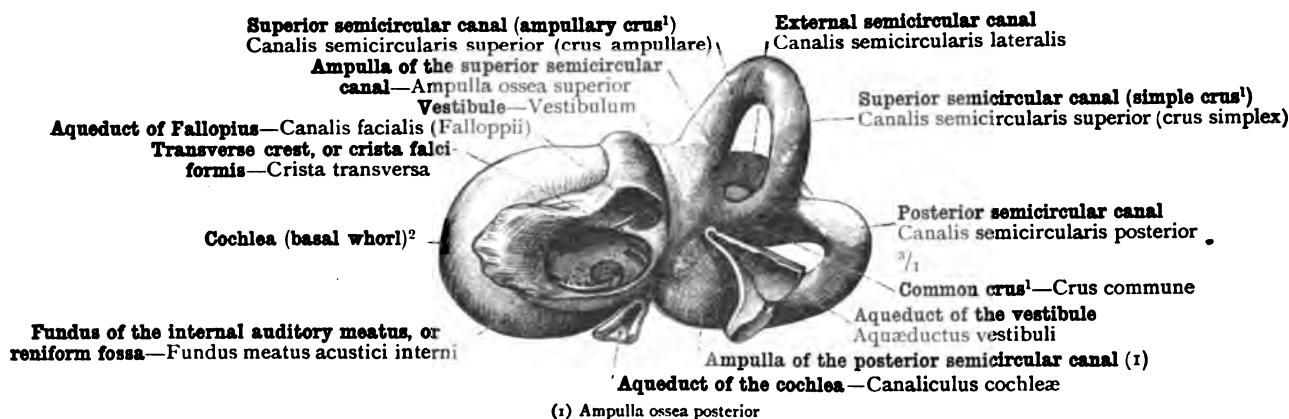


FIG. 1440.—THE OSSEOUS LABYRINTH, LABYRINTHUS OSSEUS, OF THE RIGHT EAR, WITH THE INTERNAL AUDITORY MEATUS, SEEN FROM BEHIND. THE AQUEDUCT OF THE VESTIBULE, AQUEDUCTUS VESTIBULI, AND THE AQUEDUCT OF THE COCHLEA, CANALICULUS COCHLEÆ.

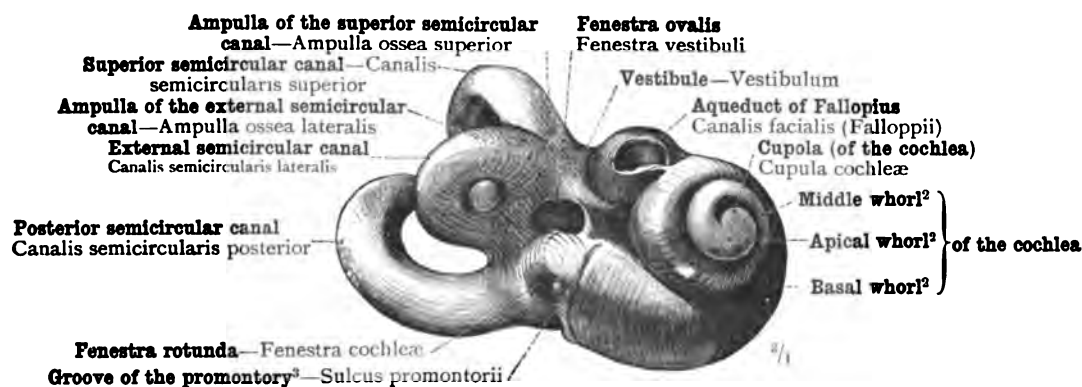


FIG. 1441.—THE OSSEOUS LABYRINTH OF THE RIGHT EAR, SEEN FROM BEFORE. THE FENESTRA OVALIS (FENESTRA VESTIBULI) AND THE FENESTRA ROTUNDA (FENESTRA COCHLEÆ); THE PART OF THE AQUEDUCT OF FALLOPIUS (CANALIS FACIALIS FALLOPPII) ADJACENT TO THE COCHLEA.

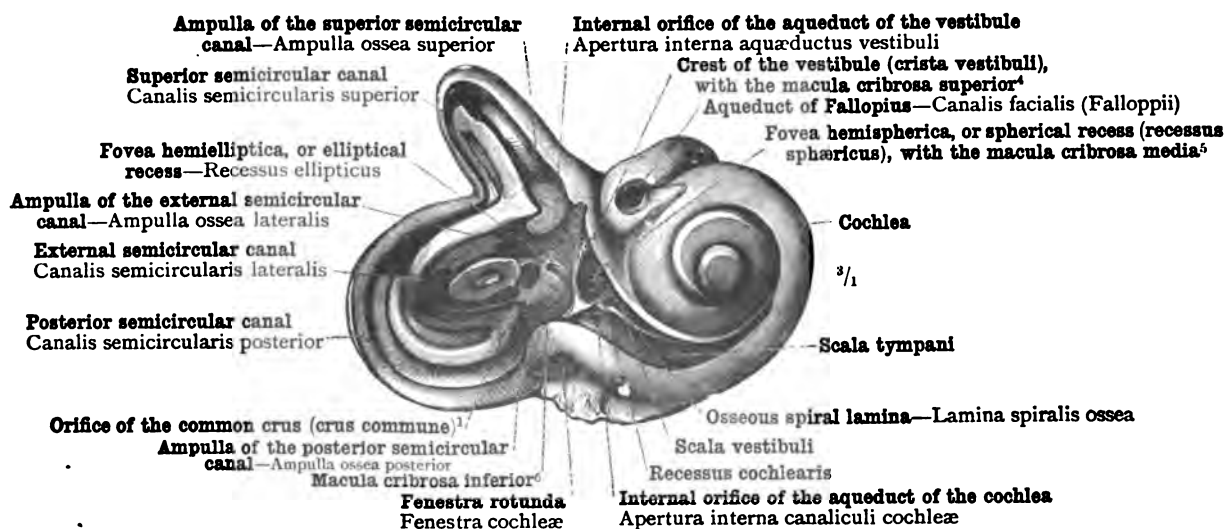


FIG. 1442.—THE OSSEOUS LABYRINTH OF THE RIGHT EAR, SEEN FROM BEFORE. THE OUTER WALL OF THE VESTIBULE HAS BEEN REMOVED, AND THE SEMICIRCULAR CANALS HAVE BEEN OPENED THROUGHOUT THEIR ENTIRE LENGTH. INNER SURFACE OF THE INNER AND POSTERIOR WALLS OF THE VESTIBULE, AND THE ORIFICES OF THE SEMICIRCULAR CANALS.

¹ See Appendix, note 579.

⁴ See Appendix, note 531.

² See Appendix, note 530.

⁵ See Appendix, note 532.

³ See Appendix, note 525.

⁶ See Appendix, note 533.

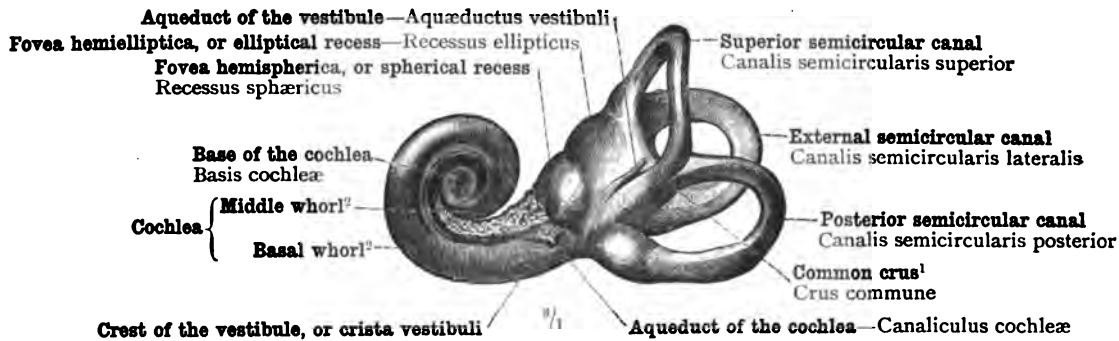


FIG. 1443.—CAST OF THE INTERIOR OF THE RIGHT OSSEOUS LABYRINTH, TAKEN WITH FUSIBLE METAL. SEEN FROM BEHIND.



FIG. 1444.—CAST OF THE INTERIOR OF THE RIGHT OSSEOUS LABYRINTH, TAKEN WITH FUSIBLE METAL. SEEN FROM BEFORE.

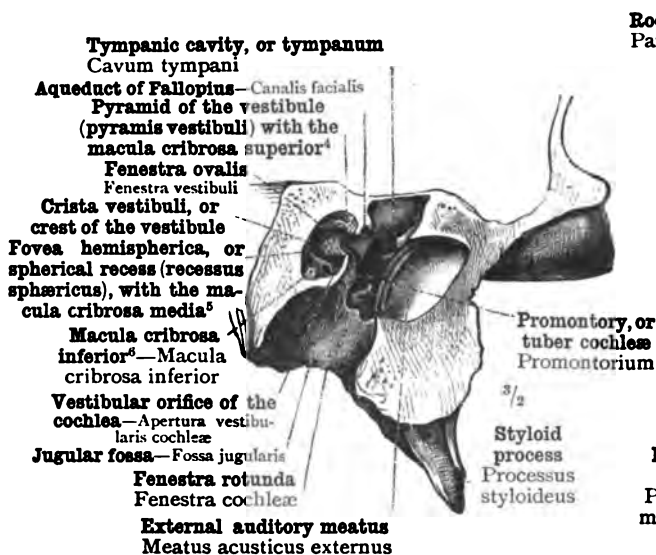


FIG. 1445.—ANTERIOR SEGMENT OF THE TEMPORAL BONE, WITH THE ANTERIOR PORTION OF THE VESTIBULE. THE MACULÆ CRIBROSÆ (see Appendix, notes 531, 532, and 533); THE VESTIBULAR ORIFICE OF THE COCHLEA.

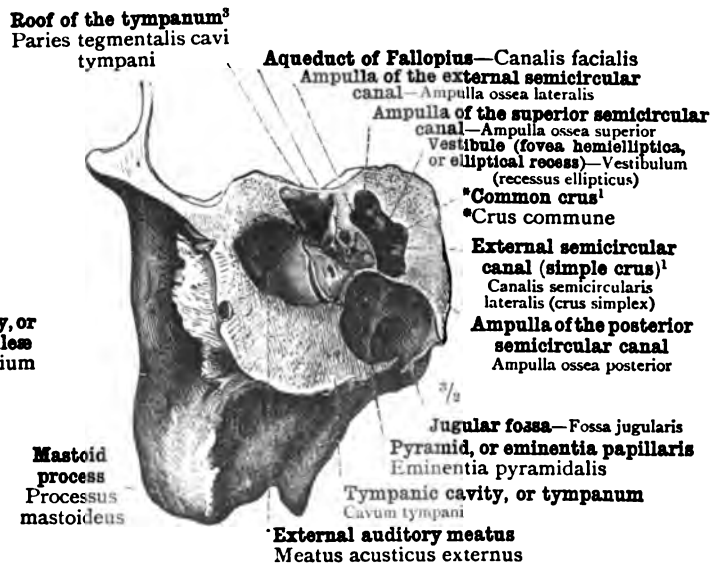


FIG. 1446.—POSTERIOR SEGMENT OF THE TEMPORAL BONE, WITH THE POSTERIOR PORTION OF THE VESTIBULE. THE ORIFICES OF THE SEMICIRCULAR CANALS.

A right temporal bone was divided by a frontal saw-cut, which cut transversely across the promontory or tuber cochleæ, the fenestra ovalis, and the vestibule of the labyrinth. The bone was thus divided into anterior and posterior segments.

¹ See Appendix, note 529.

⁴ See Appendix, note 531.

² See Appendix, note 530.

⁵ See Appendix, note 532.

³ See Appendix, note 529.

⁶ See Appendix, note 533.

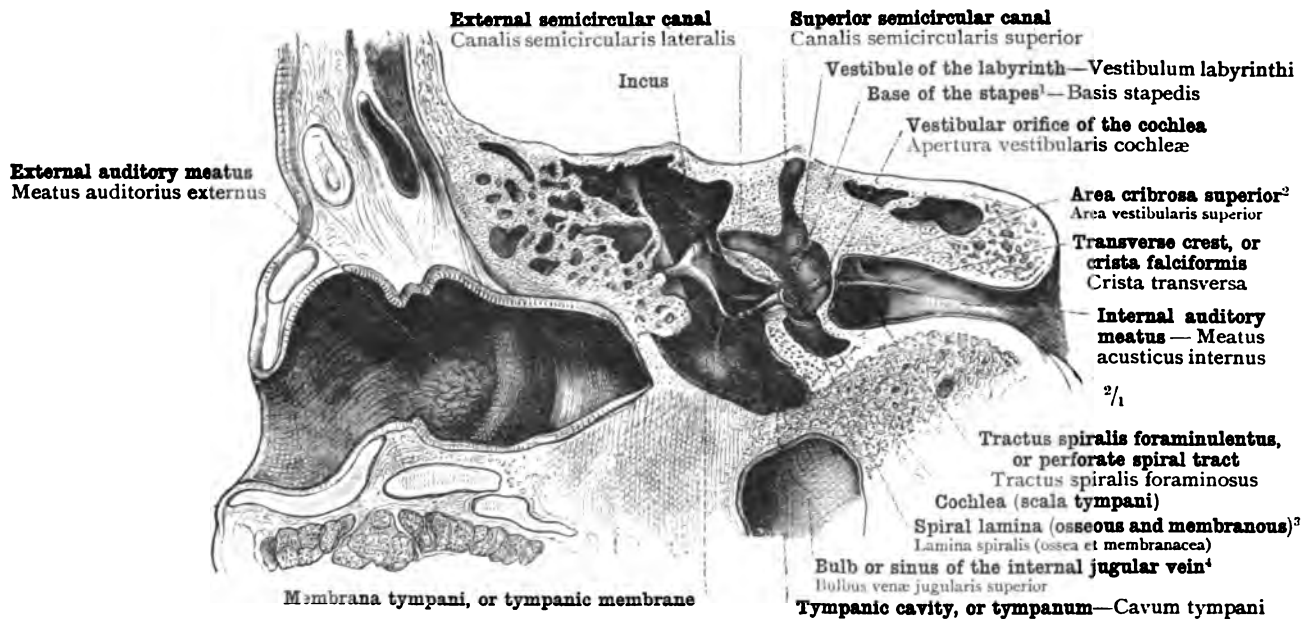


FIG. 1447.—THE VESTIBULE OF THE LABYRINTH, SHOWN IN RELATION TO THE TYMPANIC CAVITY OR TYMPANUM AND TO THE FUNDUS OF THE INTERNAL AUDITORY MEATUS OR RENIFORM FOSSA.

A section, nearly coronal in direction, was made through the left organ of hearing, dividing the external and the internal auditory meatus in the direction of the long axis of these canals. The anterior segment seen from behind.

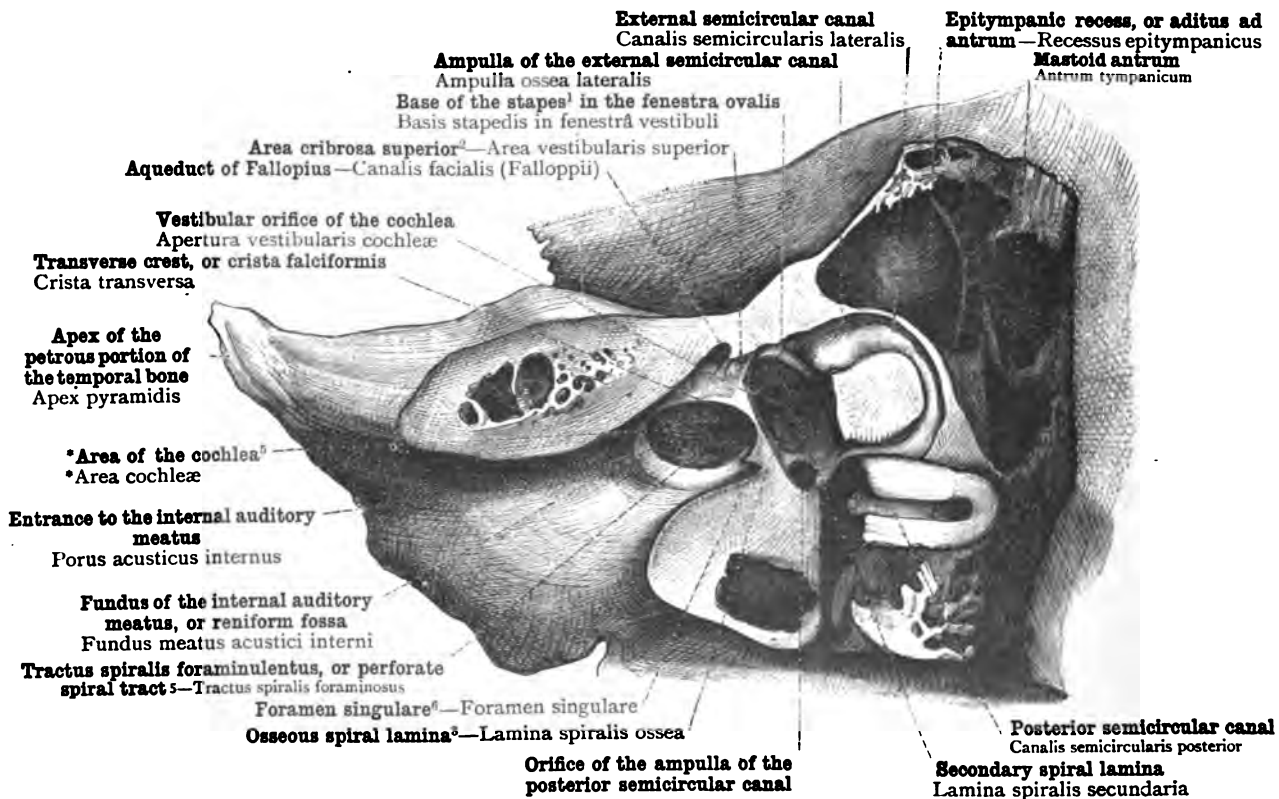


FIG. 1448.—THE VESTIBULE OF THE LABYRINTH WITH THE EXTERNAL SEMICIRCULAR CANAL, THE UPPER LIMB (*CRUS SIMPLEX—see Appendix, note 529) OF THE POSTERIOR SEMICIRCULAR CANAL, AND THE INTERNAL AUDITORY MEATUS, EXPOSED FROM ABOVE IN THE PETROUS PORTION OF THE RIGHT TEMPORAL BONE. SEEN OBLIQUELY FROM ABOVE AND BEHIND.

¹ Also called the *basal plate*, or *foot-plate*, of the stapes.

² See Appendix, note 531.

³ The Latin names, *lamina spiralis ossea* and *lamina spiralis membranacea*, are also quite commonly used in England.

⁴ See Appendix to Part V., note 121.

⁵ See Appendix, note 534.

⁶ See Appendix, note 533.

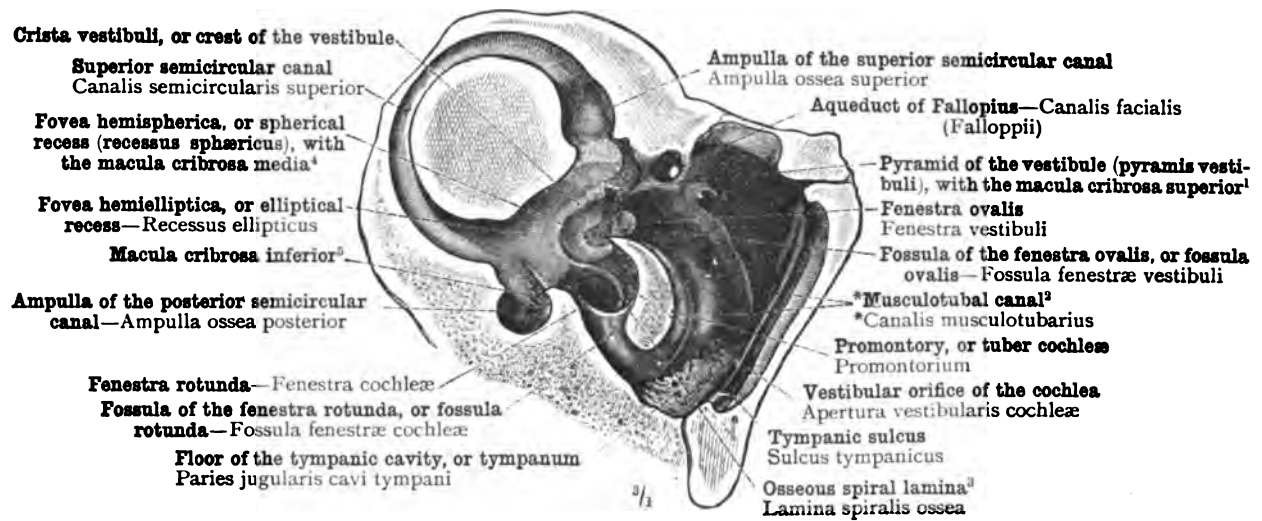


FIG. 1449.—THE ANTERIOR PORTION OF THE VESTIBULE WITH THE SUPERIOR SEMICIRCULAR CANAL. IN THE VESTIBULE WE SEE THE MACULÆ CRIBROSÆ (see Appendix, notes 531, 532, and 533) AND THE VESTIBULAR ORIFICE OF THE COCHLEA.

The petrous portion of a right temporal bone was sawn across in a plane nearly perpendicular to its long axis in such a manner that the section cut the tympanum transversely and passed through the fenestra ovalis and the whole length of the superior semicircular canal. The inner segment of the petrous portion of the temporal bone is viewed from the outer side.

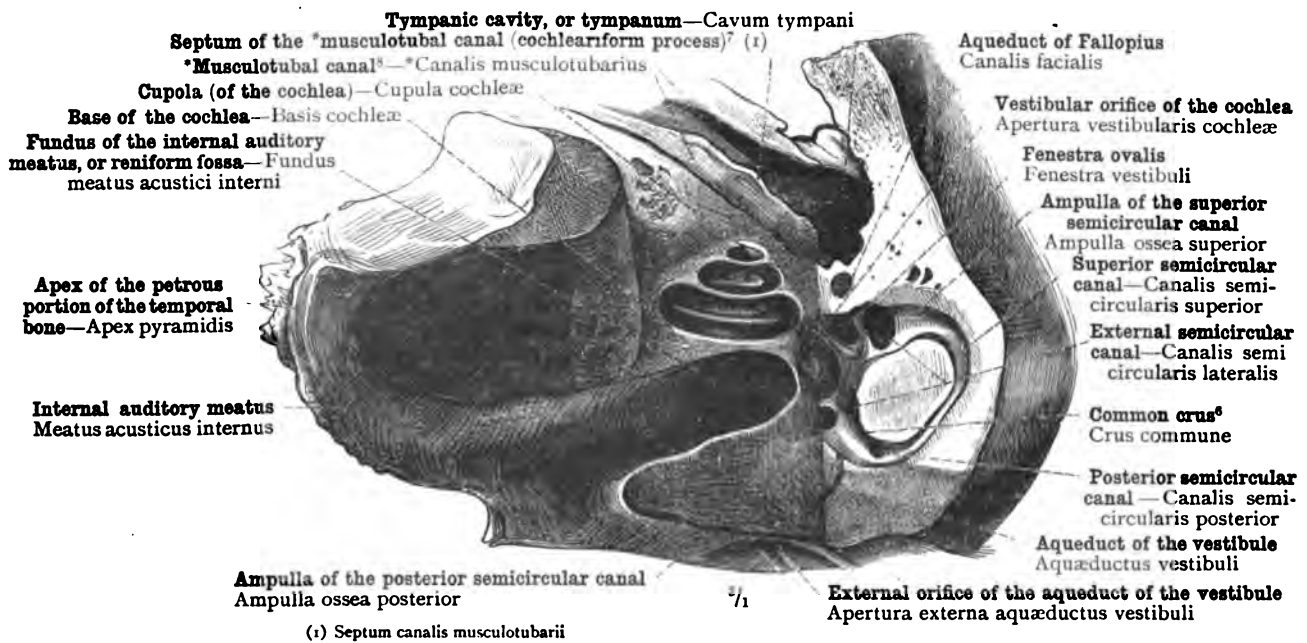


FIG. 1450.—THE RELATION OF THE VESTIBULE TO THE COCHLEA AND OF THIS LATTER TO THE FUNDUS OF THE INTERNAL AUDITORY MEATUS OR RENIFORM FOSSA AND TO THE *MUSCULOTUBAL CANAL (*i.e.*, THE CANAL FOR THE TENSOR TYMPANI MUSCLE AND THE OSSEOUS CANAL FOR THE EUSTACHIAN TUBE—see Appendix, note 528), *CANALIS MUSCULOTUBARIUS, DISPLAYED FROM ABOVE IN A RIGHT TEMPORAL BONE.

The superior semicircular canal is opened throughout its whole length, and a portion of the aqueduct of the vestibule, aquæductus vestibuli, is also exposed.

¹ See Appendix, note 532.
⁵ See Appendix, note 533.

² See Appendix, note 528.
⁶ See Appendix, note 529.

³ See note 3 to p. 932.
⁷ See Appendix, notes 521 and 526.

⁴ See Appendix, note 532.
⁸ See Appendix, note 526.

Auris interna—The internal ear.—Labyrinthus osseus—The osseous labyrinth.

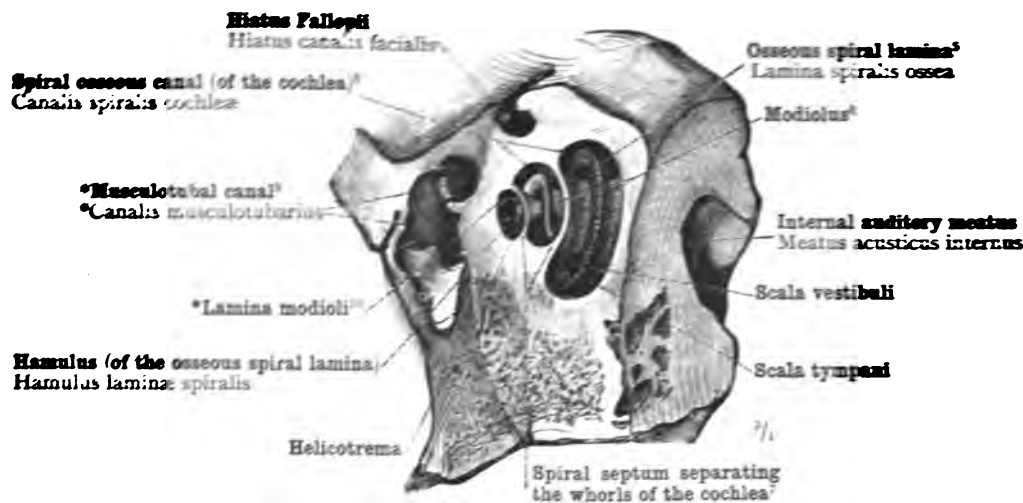


FIG. 1451.—THE (OSSEOUS) COCHLEA, DIVIDED IN A PLANE PARALLEL TO ITS LONG AXIS. ITS RELATION TO THE *MUSCULOTUBAL CANAL (*i.e.*, THE CANAL FOR THE TENSOR TYMPANI MUSCLE AND THE OSSEOUS CANAL FOR THE EUSTACHIAN TUBE—see Appendix, note 529), *CANALIS MUSCULOTUBARIUS. INNER SURFACE OF THE OUTER SEGMENT.

Displayed by a saw-cut in a plane perpendicular to the long axis of the petrous portion of the right temporal bone.

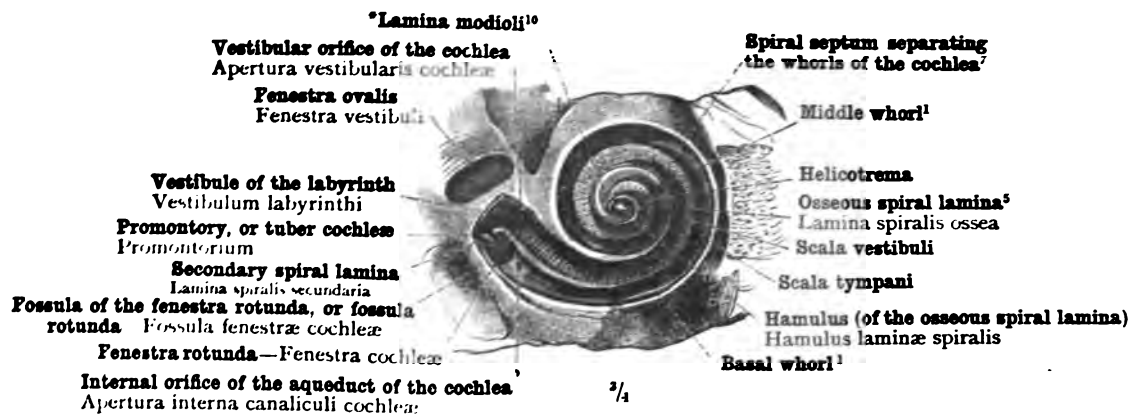


FIG. 1452.—THE (OSSEOUS) COCHLEA OF THE RIGHT EAR, DISPLAYED FROM BEFORE BY THE REMOVAL OF THE CAROTID CANAL, CANALIS CAROTICUS, AND OF THE *MUSCULOTUBAL CANAL (*i.e.*, THE CANAL FOR THE TENSOR TYMPANI MUSCLE AND THE OSSEOUS CANAL FOR THE EUSTACHIAN TUBE—see Appendix, note 529), *CANALIS MUSCULOTUBARIUS. THE WHORLS OF THE COCHLEA (*see Appendix, note 630*), OPENED BY THE REMOVAL OF THE OUTER WALL OF THAT ORGAN, ARE VIEWED FROM THE DIRECTION OF THE APEX OF THE COCHLEA—THAT IS, FROM ABOVE AND THE OUTER SIDE.

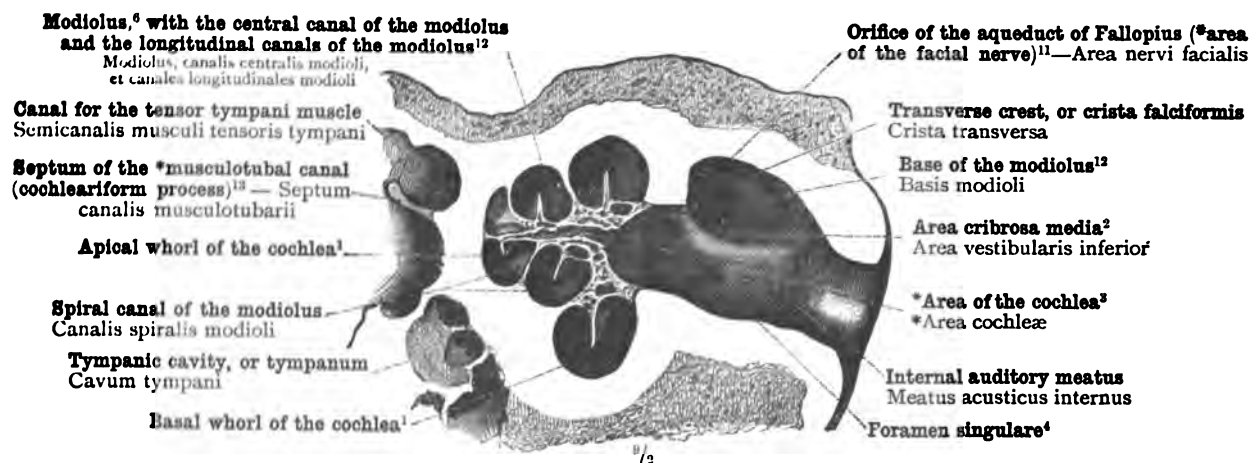


FIG. 1453.—AXIAL SECTION THROUGH THE (OSSEOUS) COCHLEA OF THE RIGHT EAR. THE MODIOLUS* IS DIVIDED THROUGHOUT ITS WHOLE LENGTH.

¹ See Appendix, note 539.

² See note 3 to p. 912.

³ See Appendix, note 535.

⁴ See Appendix, note 534.

⁵ See Appendix, note 532.

⁶ The modiolus, the central pillar or axis of the cochlea, is also known as the columella cochleæ.

⁷ See Appendix, note 536.

⁸ See Appendix, note 537.

⁹ See Appendix, note 538.

¹⁰ See Appendix, note 533.

¹¹ See Appendix, note 539.

¹² See Appendix, note 539.

¹³ See Appendix, note 540.

¹⁴ See Appendix, note 533.

¹⁵ See Appendix, note 537.

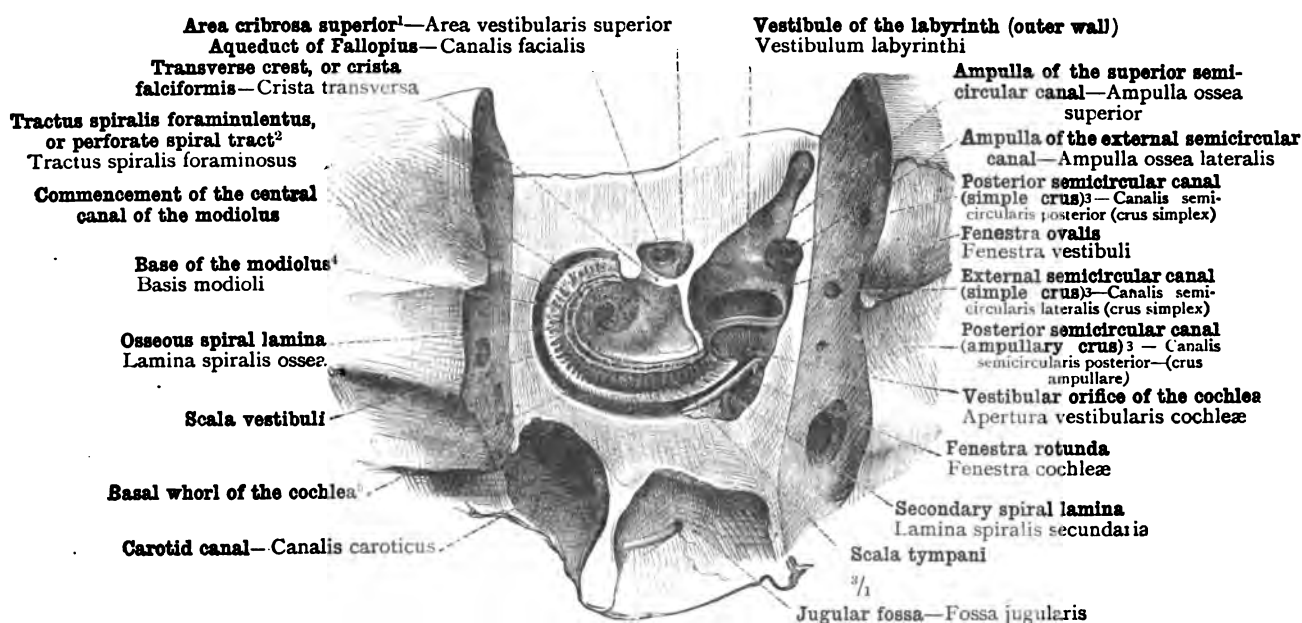


FIG. 1454.—THE BASAL WHORL OF THE COCHLEA (see Appendix, note ⁵³⁰) WITH THE BASE OF THE MODIOLUS, BASIS MODIOLI (see Appendix, note ⁵³⁰), SEEN FROM BEHIND. THE OSSEOUS SPIRAL LAMINA, LAMINA SPIRALIS OSSEA, BY MEANS OF WHICH THE SCALA VESTIBULI IS [IN PART] SEPARATED FROM THE SCALA TYMPANI, IS SEEN FROM THE BASAL SIDE OF THE COCHLEA [THAT IS, FROM BELOW, ACCORDING TO THE CONVENTIONAL DESCRIPTION OF THE COCHLEA—see Appendix, note ⁵⁴⁰]. THE OPENING OF THE SCALA VESTIBULI INTO THE VESTIBULE (VESTIBULAR ORIFICE OF THE COCHLEA, APERTURA VESTIBULARIS COCHLEÆ), AND THE OPENING OF THE SCALA TYMPANI INTO THE TYMPANUM OR TYMPANIC CAVITY BY MEANS OF THE FENESTRA ROTUNDA (CLOSED IN THE RECENT STATE BY THE SECONDARY TYMPANIC MEMBRANE OR MEMBRANE OF THE FENESTRA ROTUNDA—see Appendix, note ⁵²³). DISPLAYED FROM BEHIND IN THE PETROUS PORTION OF THE RIGHT TEMPORAL BONE.

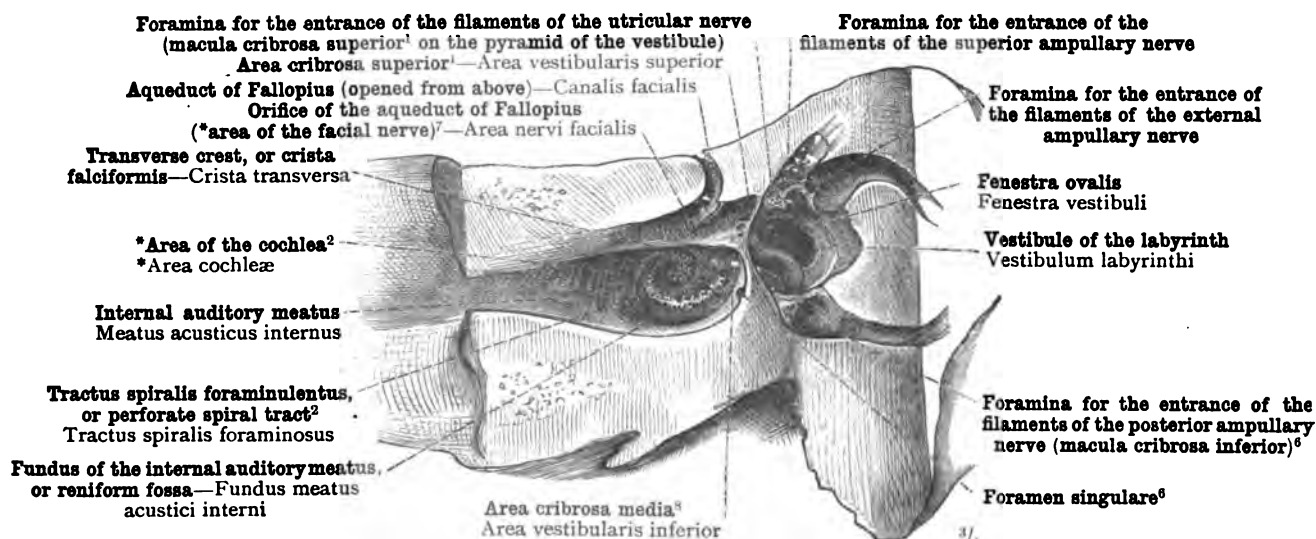


FIG. 1455.—THE INTERNAL AUDITORY MEATUS, MEATUS ACUSTICUS INTERNUS, OPENED FROM BEHIND IN THE PETROUS PORTION OF THE RIGHT TEMPORAL BONE. IN THE FUNDUS OF THE INTERNAL AUDITORY MEATUS, OR RENIFORM FOSSA, WE SEE THE TRACTUS SPIRALIS FORAMINULENTUS, OR PERFORATE SPIRAL TRACT (TRACTUS SPIRALIS FORAMINOSUS, ACCORDING TO TOLDT⁹), AND THE ORIFICES OF THE NERVE CANALICULI LEADING INTO THE MODIOLUS AND THE OSSEOUS SPIRAL LAMINA, AND ALSO THE ORIFICES OF THE NERVE CANALICULI LEADING TO THE MACULÆ CRIBROSÆ OF THE VESTIBULE AND TO THE AMPULLÆ OF THE SEMICIRCULAR CANALS (see Appendix, notes ⁵³¹, ⁵³², ⁵³³, and ⁵³⁴). IN THE VESTIBULE, LIKEWISE OPENED FROM BEHIND, WE SEE THE MACULÆ CRIBROSÆ, SUPERIOR ET INFERIOR, AND THE FORAMINA FOR THE ENTRANCE OF THE FILAMENTS OF THE SUPERIOR AND EXTERNAL AMPULLARY NERVES.

¹ See Appendix, note 531.

⁴ See Appendix, note 539.

⁷ See Appendix, note 538.

² See Appendix, note 534.

⁵ See Appendix, note 530.

⁸ See Appendix, note 532.

³ See Appendix, note 529.

⁶ See Appendix, note 533.

⁹ See Appendix, note 541.

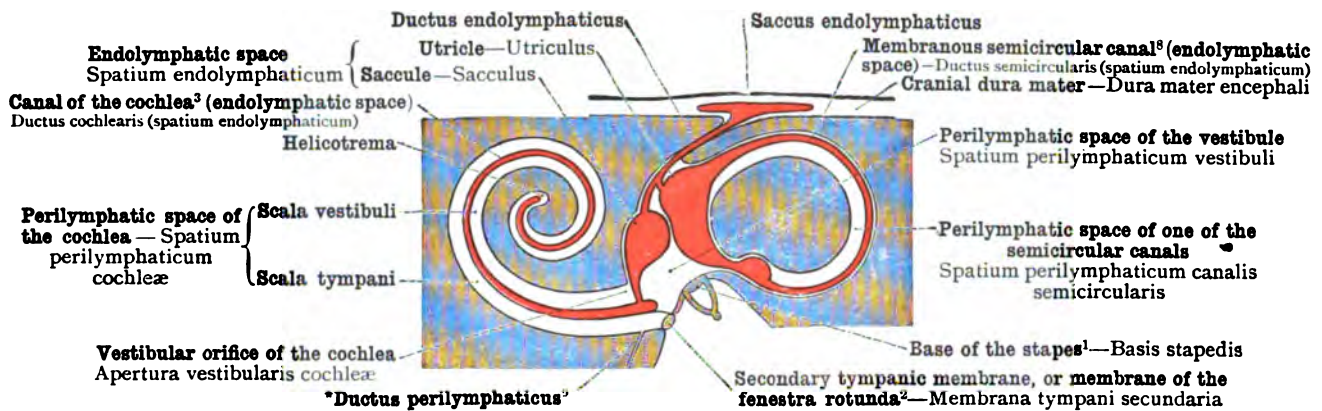


FIG. 1459.—DIAGRAM OF THE ENDOLYMPHATIC AND PERILYMPHATIC SPACES OF THE LABYRINTH (THE FORMER RED, THE LATTER WHITE).

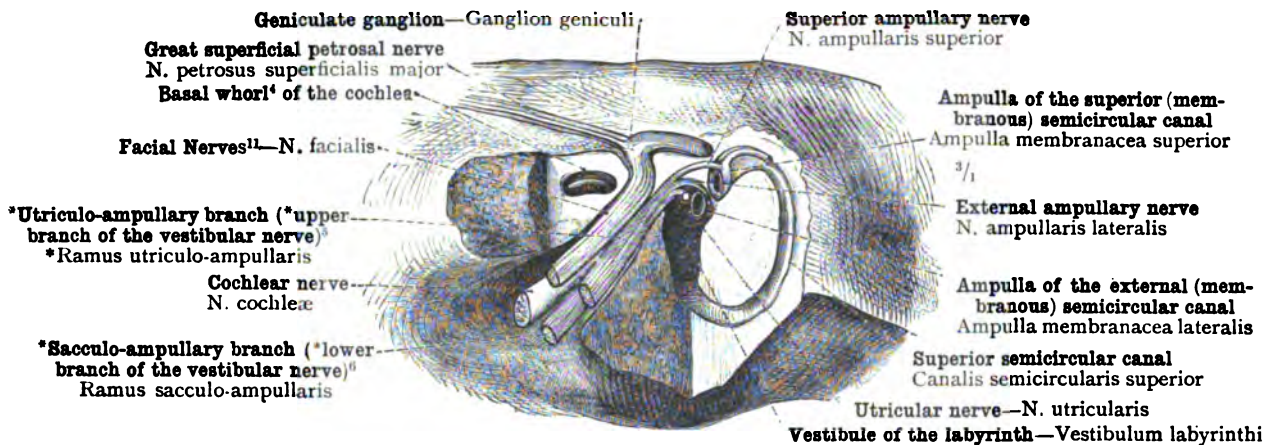


FIG. 1460.—THE FACIAL NERVE AND THE *UPPER OR *UTRICULO-AMPULLARY BRANCH, *RAMUS UTRICULO-AMPULLARIS, OF THE *VESTIBULAR NERVE, *NERVUS VESTIBULI,⁶ DISPLAYED FROM ABOVE BY THE OPENING OF THE INTERNAL AUDITORY MEATUS.

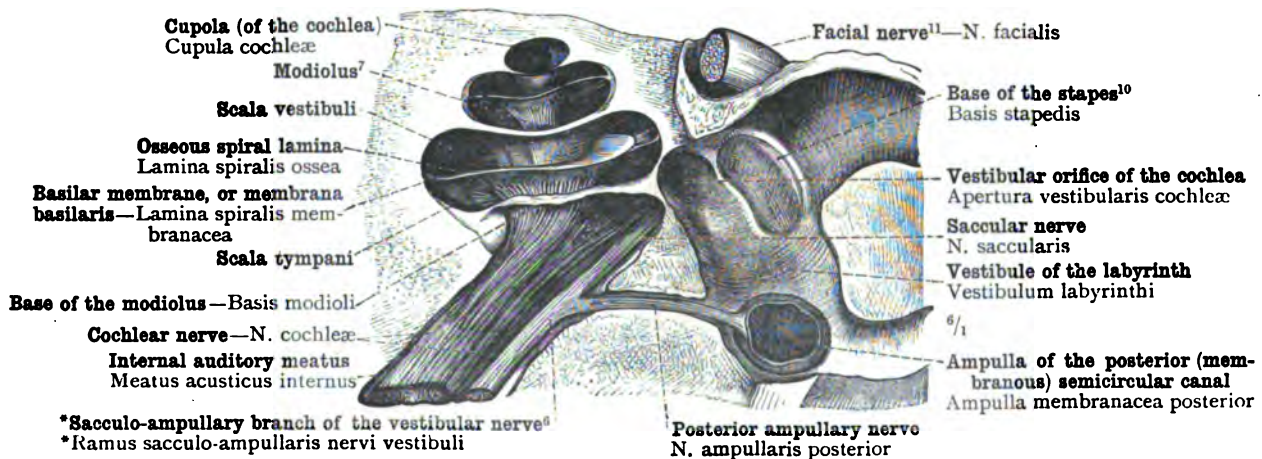


FIG. 1461.—THE COCHLEAR NERVE AND THE *LOWER OR *SACCULO-AMPULLARY BRANCH, RAMUS *SACCULO-AMPULLARIS,⁶ OF THE *VESTIBULAR NERVE, *NERVUS VESTIBULARIS, DISPLAYED IN THE PREPARATION ALREADY DEPICTED IN FIG. 1460 BY THE REMOVAL OF THE FACIAL NERVE AND THE *UPPER BRANCH OF THE *VESTIBULAR NERVE.⁵

¹ Known also as the *basal plate* or *foot-plate of the stapes*.

² See Appendix, note 523.

³ Or, more briefly, the *cochlear canal*. Also known in England by the Latin names *canalis (membranaceus) cochlear* and *ductus cochlearis*. It was formerly known as the *scala media*. See Appendix, note 536.

4 See Appendix, note 53.

⁵ This "utriculo-ampullary branch, or so-called 'upper branch of the vestibular nerve,' is itself the entire vestibular nerve in Quain's terminology. See Appendix, note 544.

⁶ This *sacculo-ampullary branch* represents the *posterior branch of the inferior division of the auditory nerve* in Quain's terminology. See Appendix, note 544.

7 Also known as the *columella cochleæ*.

⁸ See Appendix, note 542.

⁹ See Appendix, note 547.

10 Also known as the *foot-plate*, or *basal plate*, of the stapes.

¹¹ In Soemmerring's enumeration the *facial* is the *seventh*, the *auditory* the *eighth cranial nerve*; in that of Willis the *former* is the *portio dura*, the latter the *portio mollis*, of the *seventh cranial nerve*.

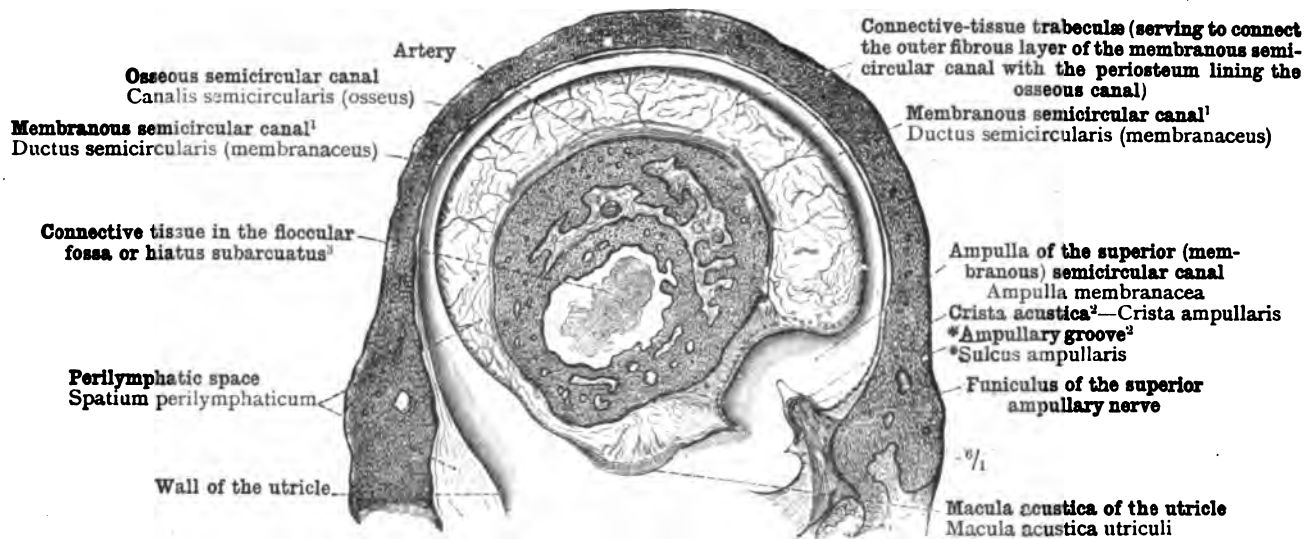


FIG. 1462.—LONGITUDINAL SECTION THROUGH THE SUPERIOR (OSSEOUS AND MEMBRANOUS) SEMICIRCULAR CANAL; THE CRISTA AMPULLARIS (see Appendix, note 643), WITH THE NERVE TERMINAL, IS SEEN IN TRANSVERSE SECTION.

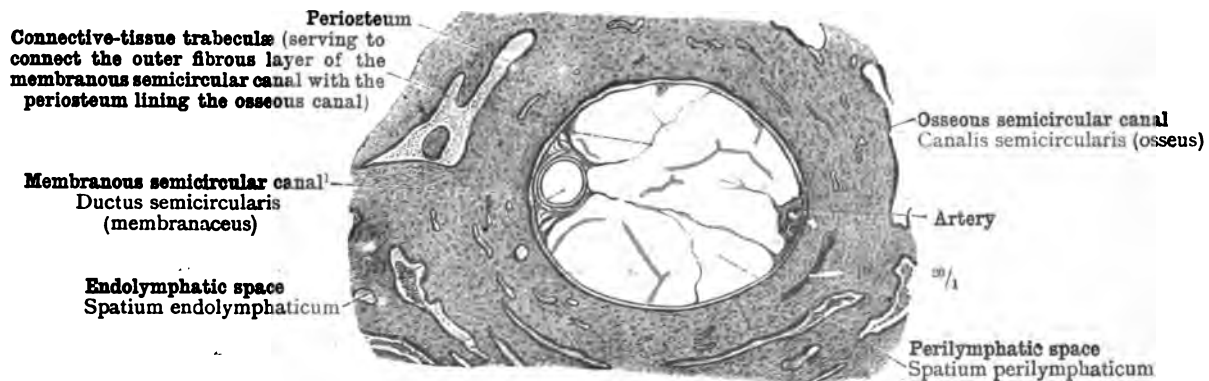


FIG. 1463.—TRANSVERSE SECTION THROUGH THE SIMPLE CRUS OF THE SUPERIOR (OSSEOUS AND MEMBRANOUS) SEMICIRCULAR CANAL.

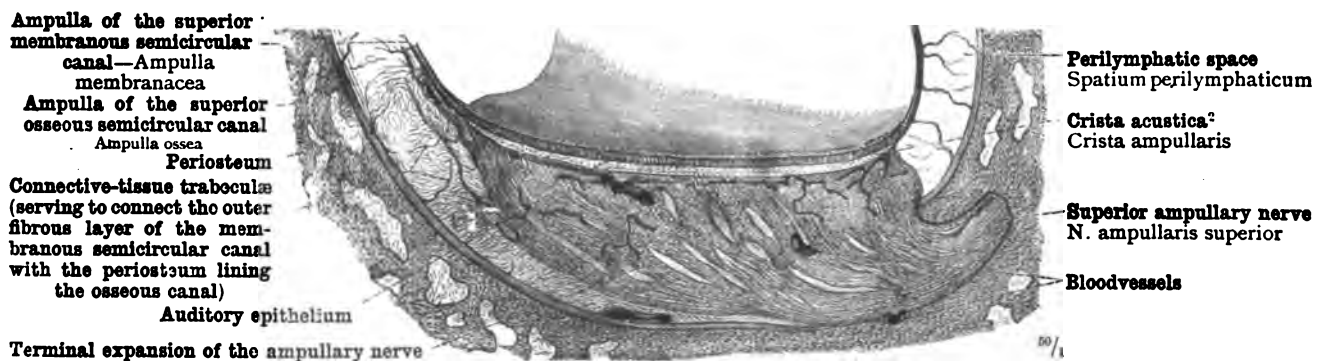


FIG. 1464.—SECTION THROUGH THE AMPULLA OF THE SUPERIOR SEMICIRCULAR CANAL ALONG THE CRISTA ACUSTICA (see Appendix, note 643); THE NERVE TERMINAL AND THE NERVE FILAMENT PASSING TO THE CREST ARE DIVIDED LONGITUDINALLY.

ALL THREE SPECIMENS FIGURED ON THIS PAGE WERE PREPARED FROM THE DECALCIFIED PETROUS BONE OF A NEW-BORN INFANT.

¹ See Appendix, note 542.

² See Appendix, note 543.

³ By Toldt called *fossa subarcuata*—see Fig. 129, p. 63, and Fig. 144, p. 70, in Part I. It receives its name because, in the infantile state of the bone (here figured), the fossa passes beneath the arch of the superior semicircular canal. In the adult this deep pit is replaced by a small foramen occupied by a strand of connective tissue.

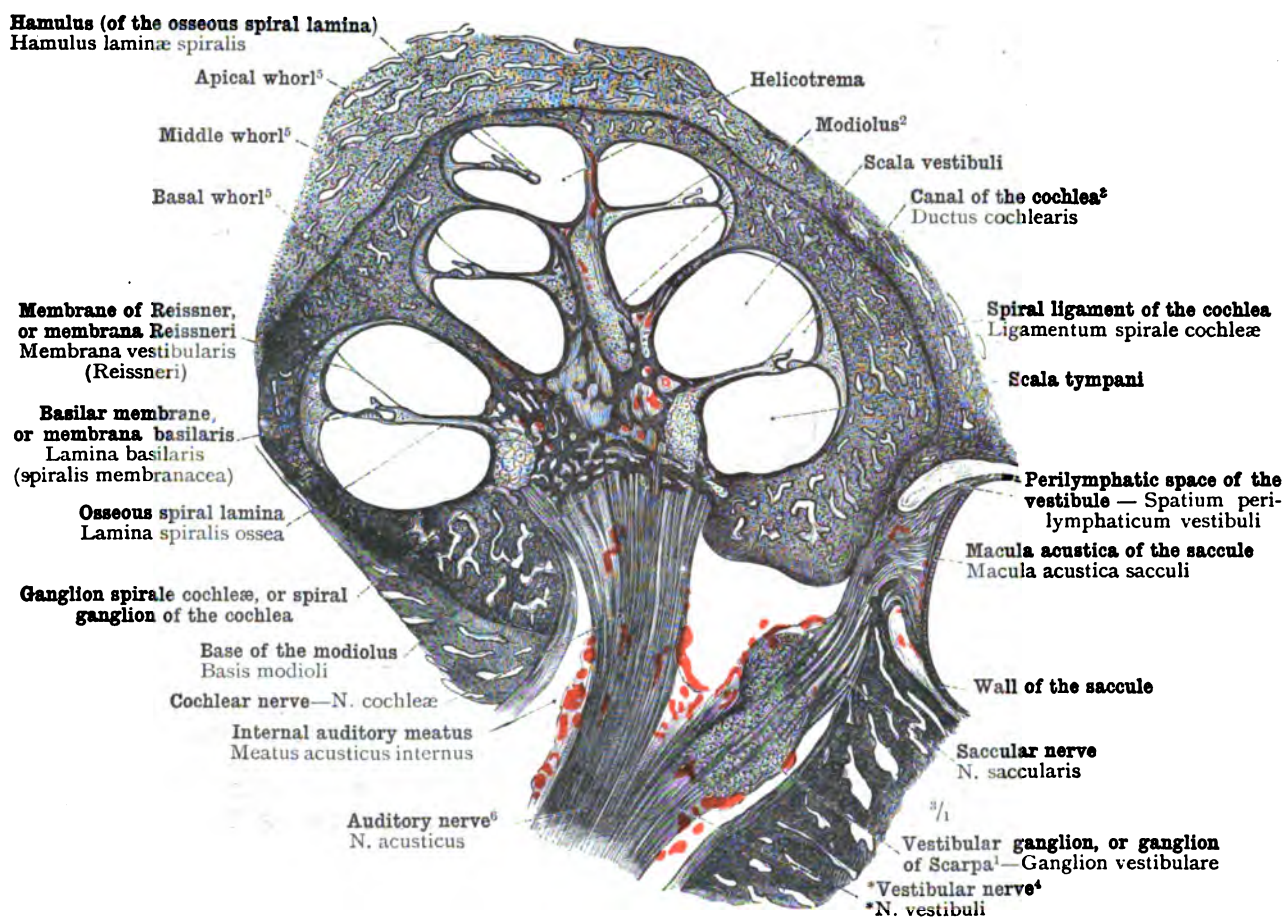


FIG. 1465.—AXIAL SECTION THROUGH THE DECALCIFIED COCHLEA OF A NEW-BORN INFANT. ENTRANCE OF THE COCHLEAR NERVE. ON THE RIGHT SIDE OF THE PREPARATION WE SEE THE MACULA ACUSTICA OF THE SACCULE, THE NERVE TERMINAL OF THE SACCULAR NERVE, AND ALSO THE VESTIBULAR GANGLION OR GANGLION OF SCARPA, GANGLION VESTIBULARE.¹

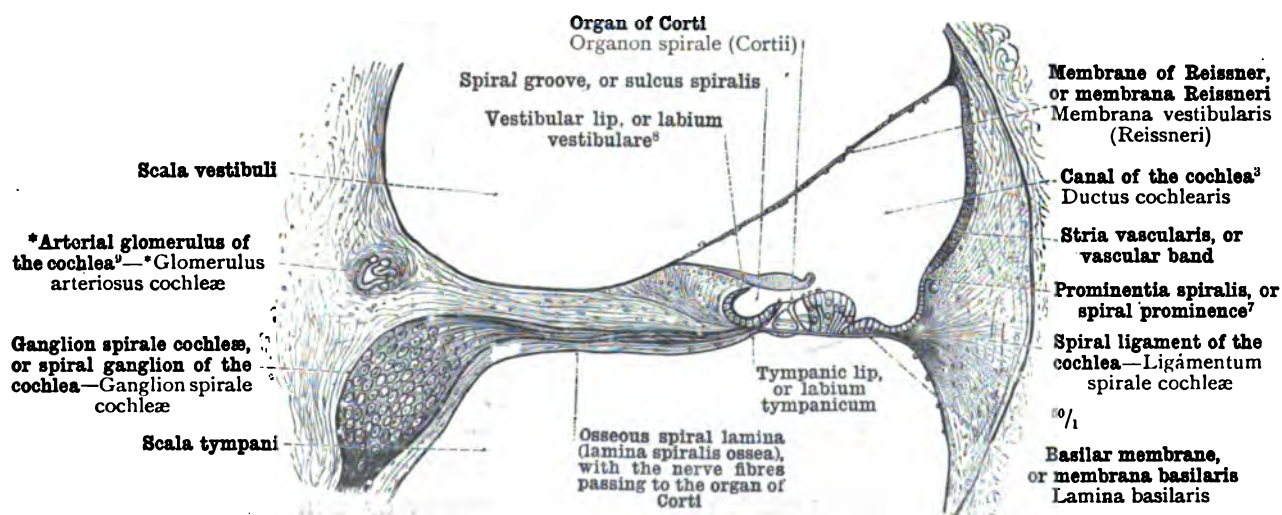


FIG. 1466.—AXIAL SECTION THROUGH ONE OF THE WHORLS OF THE COCHLEA (see Appendix, note 630). CANAL OF THE COCHLEA, DUCTUS COCHLEARIS,³ WITH THE TERMINAL APPARATUS OF THE COCHLEAR NERVE, KNOWN AS THE ORGAN OF CORTI, ORGANON SPIRALE.

¹ Or *intumescencia ganglioformis Scarpa*. ² Also known as the *columella cochlea*.
³ Or, more briefly, the *cochlear canal*. Also known in England by the Latin names *canalis (membranaceus) cochleae* and *ductus cochlearis*. It was formerly known as the *scala media*. See also Appendix, note 536.
⁴ See Appendix, note 548. ⁵ See Appendix, note 530.
⁶ Eighth cranial nerve in Soemmerring's enumeration; *portio mollis* of the seventh in that of Willis.
⁷ See Appendix, note 540.
⁸ The vestibular lip of the osseous spiral lamina is also known as the *crista spiralis*, and sometimes as the *labium sulcatum* (Macalister).
⁹ See Appendix, note 550.

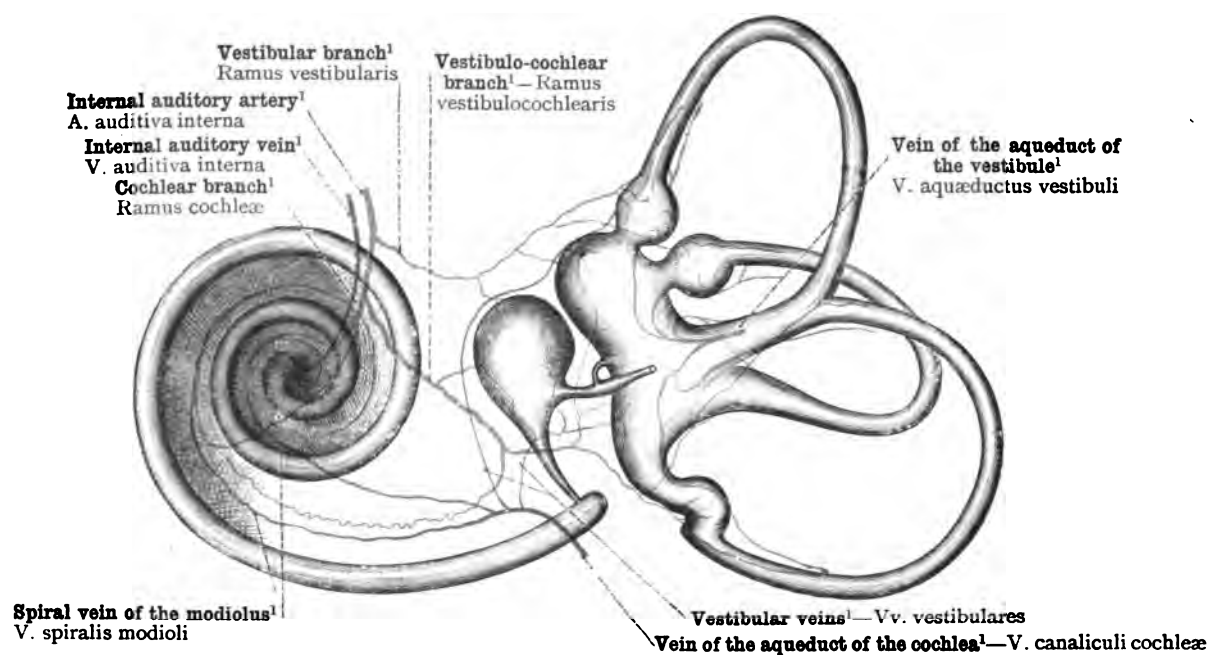


FIG. 1467.—DIAGRAMMATIC REPRESENTATION OF THE DISTRIBUTION OF THE BLOODVESSELS OF THE MEMBRANOUS LABYRINTH. (BASED ON THE RESEARCHES OF SIEBENMANN; *see Appendix, note* ⁵⁵¹.)

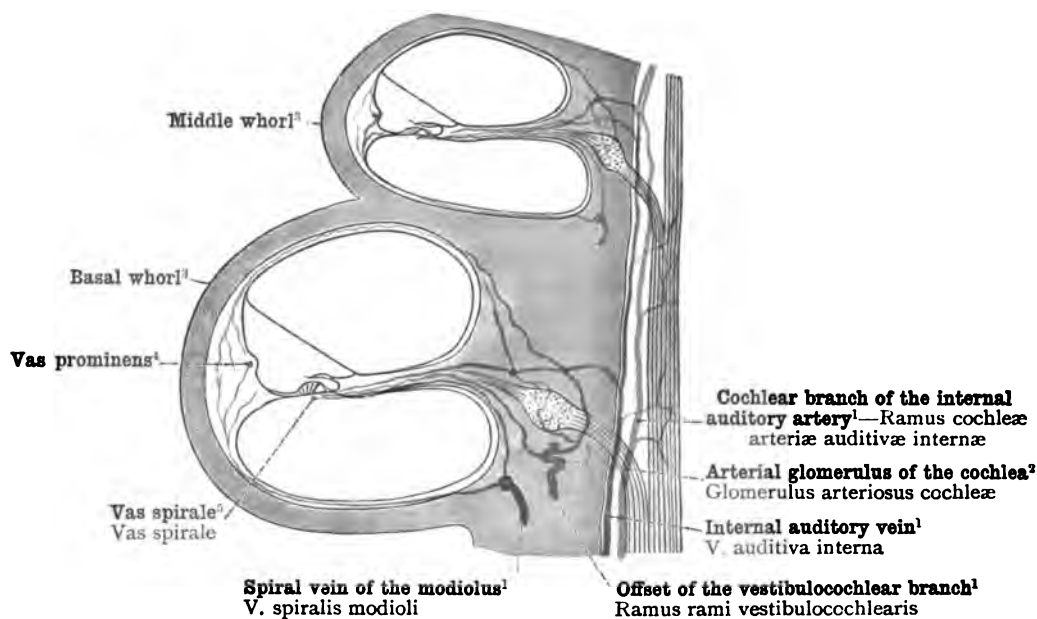


FIG. 1468.—DIAGRAMMATIC REPRESENTATION OF THE DISTRIBUTION OF THE BLOODVESSELS OF THE COCHLEA (*see Appendix, note* ⁵⁵¹).

¹ See Appendix, note 551.

² See Appendix, note 550.

³ See Appendix, note 552.

⁴ See Appendix, note 549.

⁵ See Appendix, note 552.

Auris interna—The internal ear.—The Bloodvessels of the Labyrinth (*see Appendix, note* ⁵⁵¹).

ORGANON OLFACTUS, CAVUM NASI

THE NOSE

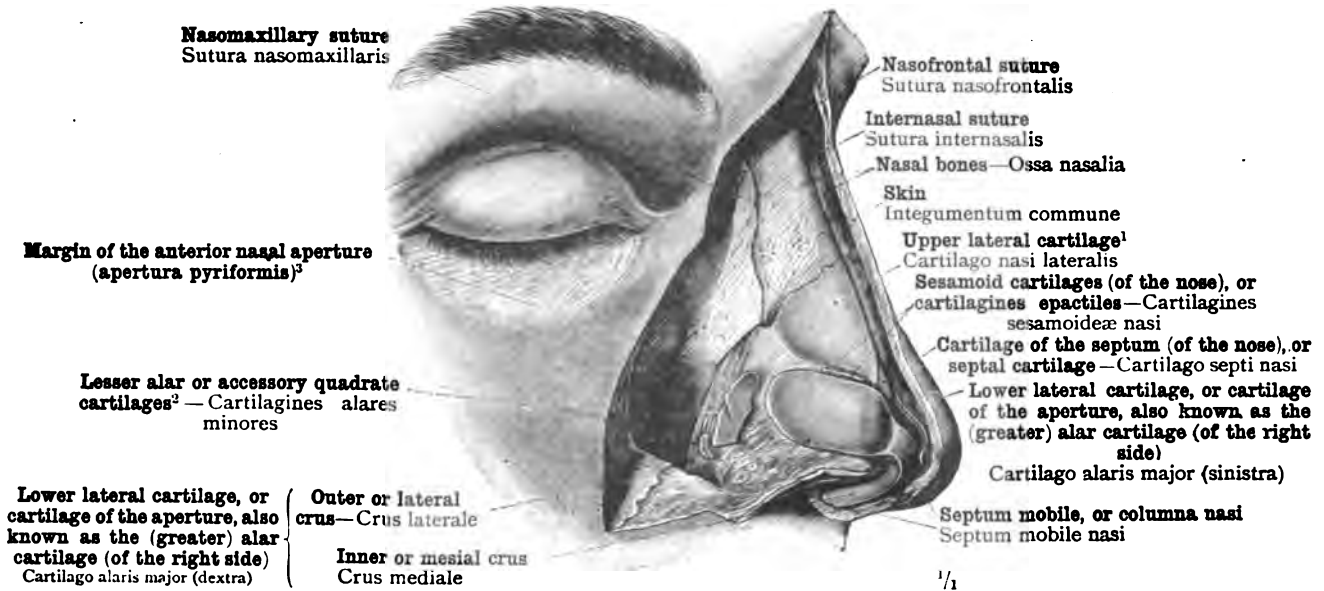


FIG. 1469.—THE CARTILAGES OF THE NOSE, DISPLAYED BY THE REMOVAL OF THE SKIN AND THE MUSCLES FROM THE RIGHT SIDE OF THE NOSE: THE LOWER LATERAL CARTILAGE OR CARTILAGE OF THE APERTURE, ALSO KNOWN AS THE (GREATER) ALAR CARTILAGE, CARTILAGO ALARIS MAJOR, AND THE LESSER ALAR OR ACCESSORY QUADRATE CARTILAGES, CARTILAGINES ALARES MINORES,² FORMING THE GROUNDWORK OF THE ALA NASI; THE UPPER LATERAL CARTILAGE, CARTILAGO NASI LATERALIS,¹ WHICH, IN CONJUNCTION WITH THE NASAL BONE, COMPLETES THE FRAMEWORK OF THE DORSUM OF THE NOSE; THE SESAMOID CARTILAGES (OF THE NOSE), OR CARTILAGINES EPACILES, CARTILAGINES SESAMOIDEÆ NASI.

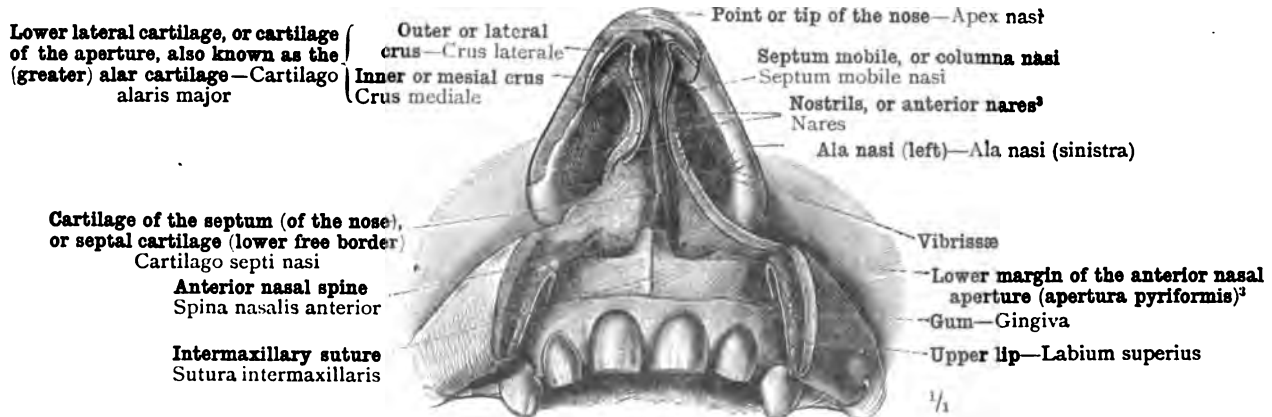


FIG. 1470.—THE NOSTRILS OR ANTERIOR NARES³: BETWEEN THEM IS THE MOVABLE PORTION OF THE SEPTUM OF THE NOSE, SEPTUM MOBILE OR COLUMNA NASI (ALSO KNOWN IN THE GERMAN OFFICIAL NOMENCLATURE AS "SEPTUM MEMBRANEUM NASI"; AS GROUNDWORK OF THE NOSTRILS WE SEE ON EACH SIDE THE INNER OR MESIAL CRUS OF THE LOWER LATERAL CARTILAGE OR CARTILAGE OF THE APERTURE, CARTILAGO ALARIS MAJOR.

¹ By Macalister called the *lateral expansion of the septal cartilage*; or sometimes, the *lower lateral cartilage* of Quain being by Macalister called the *alar cartilage*, the *upper lateral cartilage* of Quain is by Macalister called simply the *lateral cartilage*.

² *Lesser Alar Cartilages*.—The name of *lesser alar cartilage* is given in contrast with the name of (*greater*) alar cartilage by which the lower lateral cartilage or cartilage of the aperture is sometimes known. Quain, however, calls them *cartilagine minores vel quadrate*; while the name *accessory quadrate cartilages* is used by Macalister.

³ *Anterior Nasal Aperture and Anterior Nares*.—The *anterior nasal aperture* (*apertura pyriformis* in the official German nomenclature, and the name is often used also in England) is the anterior orifice of the nasal fossæ in the dried skull; the *anterior nares*, on the other hand, are the *nostriis*, the anterior orifices of the nasal fossæ when the soft parts are intact.

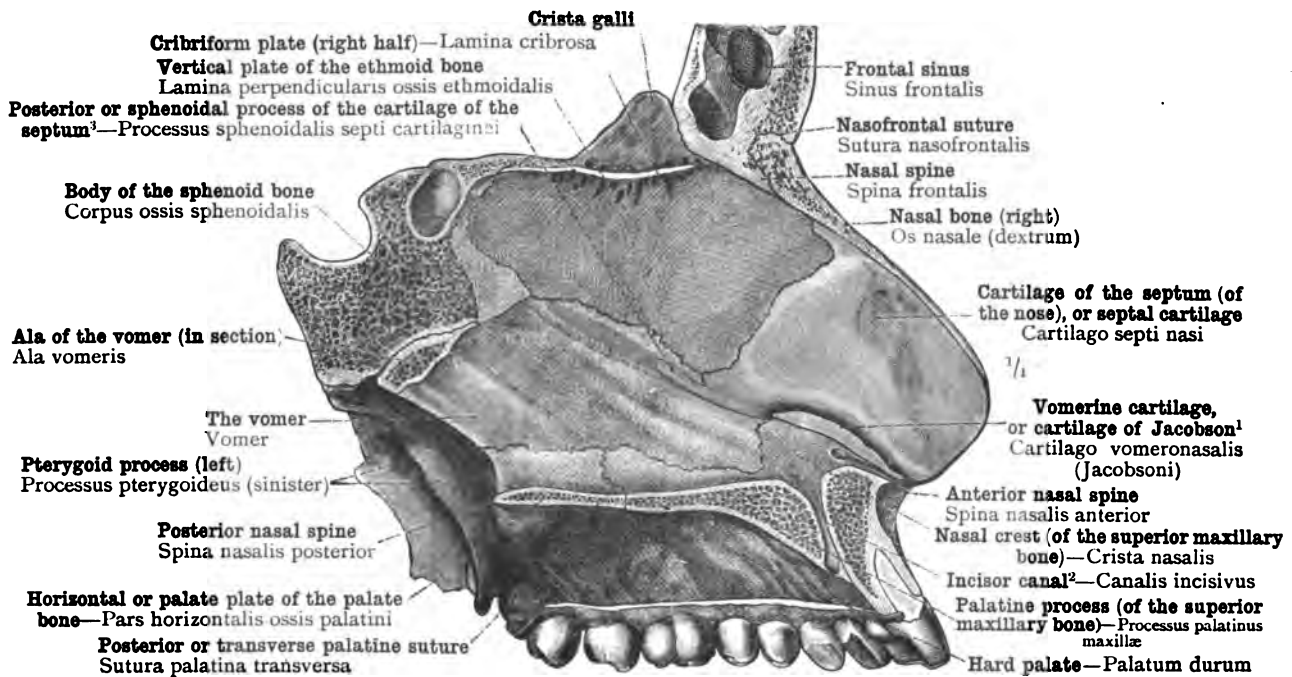


FIG. 1471.—THE OSSEOUS AND CARTILAGINOUS SEPTUM OF THE NOSE, SEPTUM OSSEUM ET SEPTUM CARTILAGINEUM NASI; ALONG THE LOWER BORDER OF THE CARTILAGE OF THE SEPTUM IS THE VOMERINE CARTILAGE OR CARTILAGE OF JACOBSON (CARTILAGO VOMERONASALIS—see *Appendix*, note ⁶⁶³). SEEN FROM THE RIGHT SIDE.

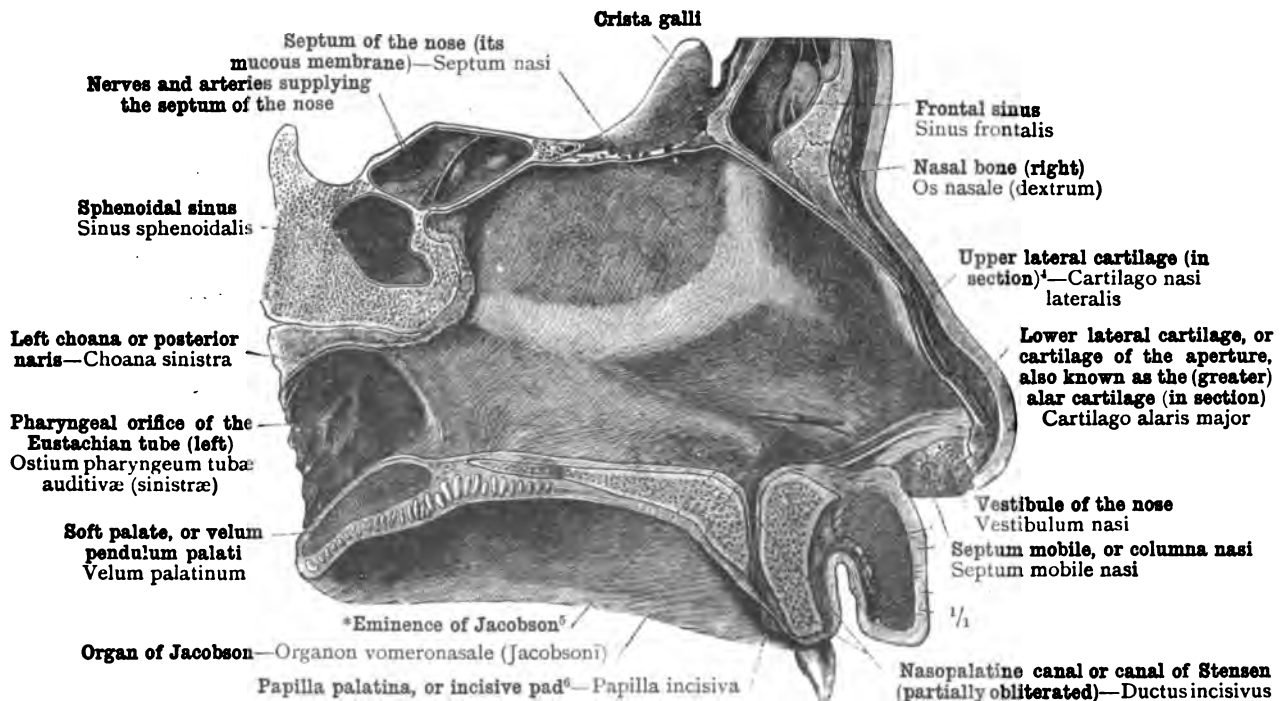


FIG. 1472.—THE NASAL SEPTUM, SEPTUM NASI, COVERED BY ITS MUCOUS MEMBRANE, SEEN FROM THE RIGHT SIDE. CORRESPONDING TO THE LOWER MARGIN OF THE CARTILAGE OF THE SEPTUM IS THE BOUNDARY BETWEEN THE VESTIBULE OF THE NOSE, VESTIBULUM NASI, AND THE NASAL FOSSÆ PROPER, CAVUM NASI. A SOUND HAS BEEN PASSED INTO THE CANAL OF THE RUDIMENTARY ORGAN OF JACOBSON.

¹ See Appendix, note 553.

² See Appendix, note 45^r.

¹ See Appendix, note 553. ² See Appendix, note 451.
³ The Latin name only of this process is mentioned by Quain--*processus posterior seu sphenoidalis*.
⁴ See note ¹ to p. 942. ⁵ See Appendix, note 554. ⁶ See note 5 to p. 416, in Part IV.

⁴ See note ¹ to p. 942.

⁵ See Appendix, note 554.

⁶ See note 5 to p. 416, in Part IV.

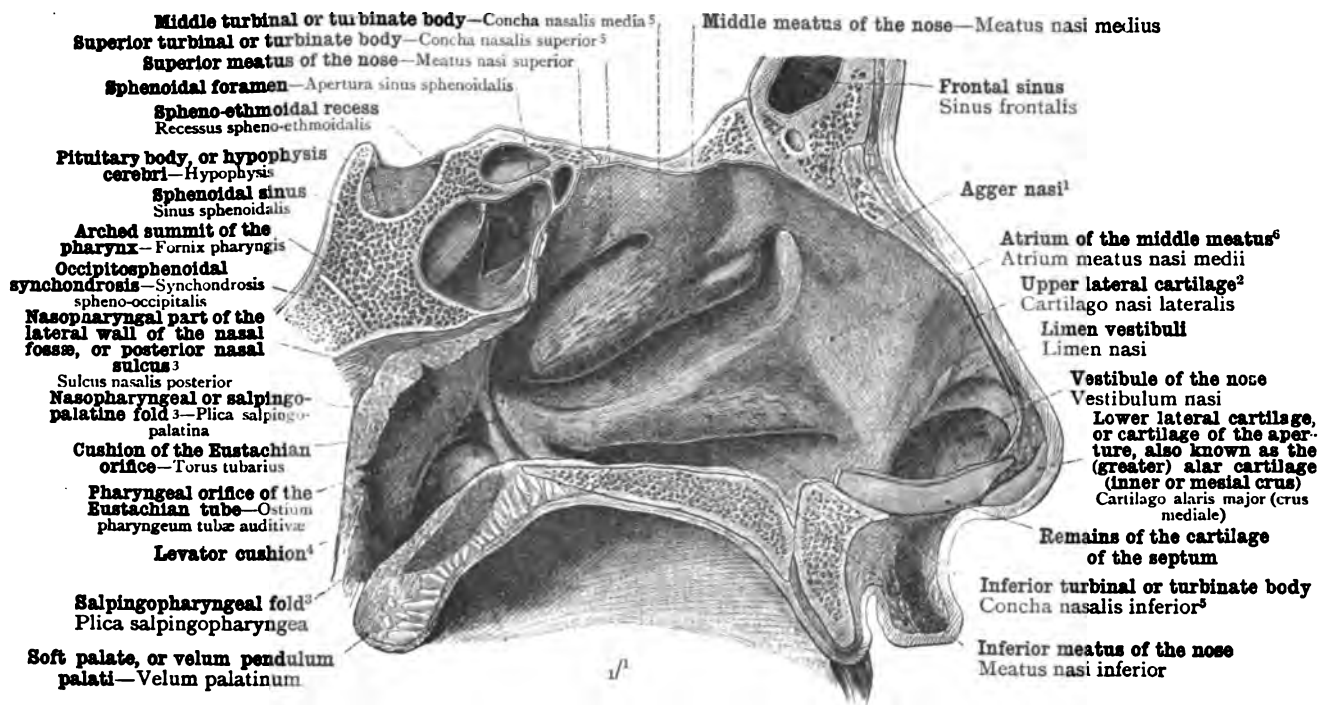


FIG. 1473.—THE LEFT LATERAL WALL OF THE NASAL FOSSÆ WITH THE TURBINATE BONES AND THE NASAL MEATUS. THE VESTIBULE OF THE NOSE, VESTIBULUM NASI, IS MARKED OFF FROM THE NASAL FOSSÆ PROPER BY THE LIMEN VESTIBULI, LIMEN NASI, WHICH CORRESPONDS TO THE LOWER MARGIN OF THE UPPER LATERAL CARTILAGE.

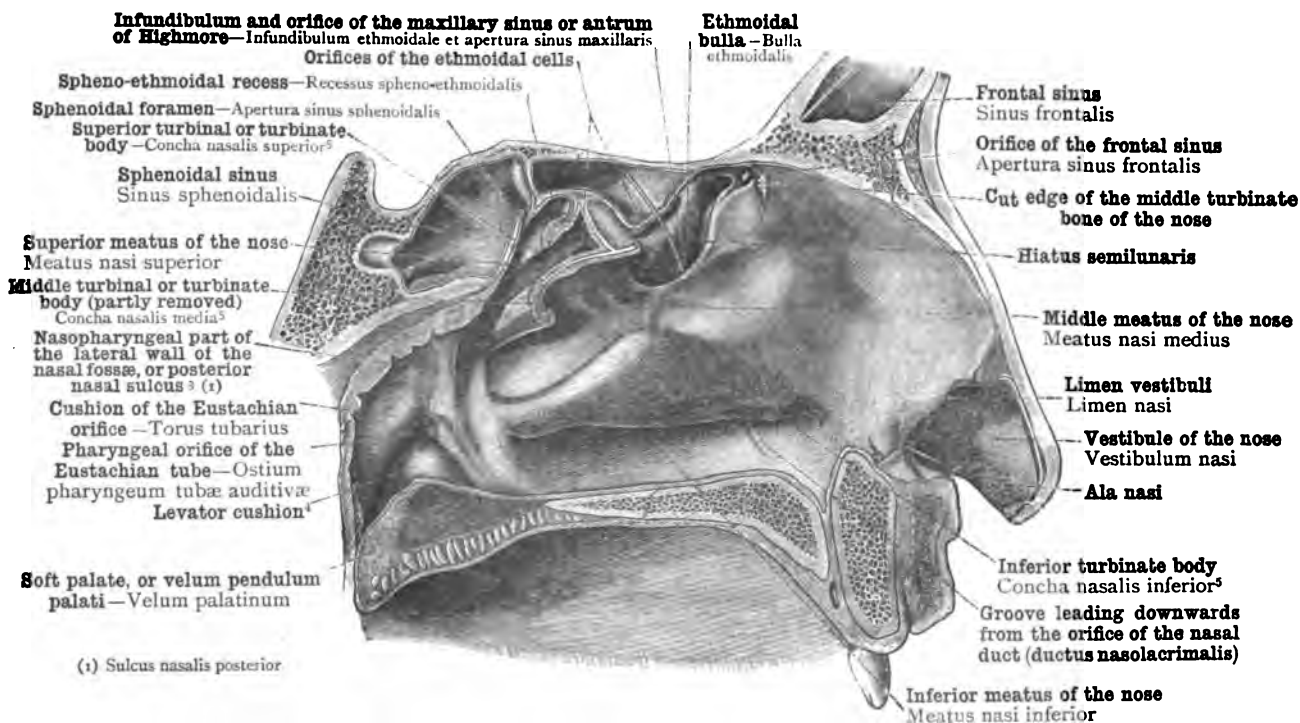


FIG. 1474.—THE LEFT LATERAL WALL OF THE NASAL FOSSÆ, THE GREATER PART OF THE MIDDLE TURBINATE AND THE ANTERIOR PORTION OF THE SUPERIOR TURBINATE HAVING BEEN REMOVED. THE ORIFICES OF THE ACCESSORY CAVITIES OF THE NOSE, SINUS PARANASALES: OF THE SPHENOIDAL SINUS, SINUS SPHENOIDALIS, THE FRONTAL SINUS, SINUS FRONTALIS, AND THE MAXILLARY SINUS OR ANTRUM OF HIGHMORE, SINUS MAXILLARIS. THE TWO LAST-NAMED ORIFICES ARE DISTINGUISHED BY SOUNDS WHICH HAVE BEEN PASSED THROUGH THEM.

¹ Agger Nasi.—This ridge, which is visible also in the dried bone (see Fig. 160, p. 78, and Figs. 203 and 204, p. 90, Part I.), is a rudiment of the nasoturbinal met with in most mammals.

² See note ¹ to p. 942.

³ See Appendix to Part IV., note 4.

⁴ See note 4 to p. 436, in Part IV.

⁵ Concha Nasales.—In Toldt's nomenclature the same term, *concha nasalis*, is used to denote the *turbinate bone* and the *turbinal* or *turbinate body*—i.e., the turbinate bone covered by mucous membrane.

⁶ By Macalister called the *region of the atrium*.

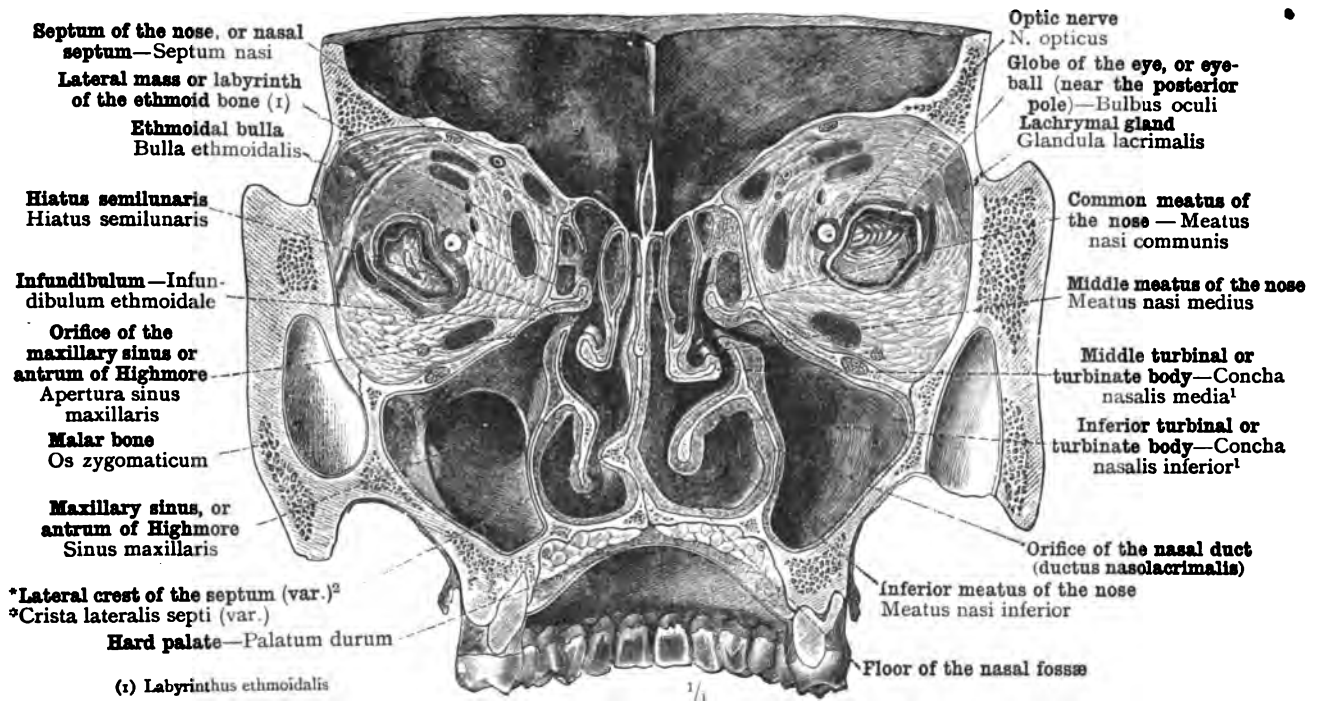


FIG. 1475.—CORONAL SECTION PASSING NEARLY THROUGH THE MIDDLE OF THE NASAL FOSSÆ. THE ANTERIOR SEGMENT VIEWED FROM BEHIND. ORIFICES OF THE MAXILLARY SINUSES OR ANTRA OF HIGHMORE. THE ORBITS ARE DIVIDED IN A PLANE IMMEDIATELY BEHIND THE ENTRANCE OF THE OPTIC NERVE INTO THE EYEBALL.

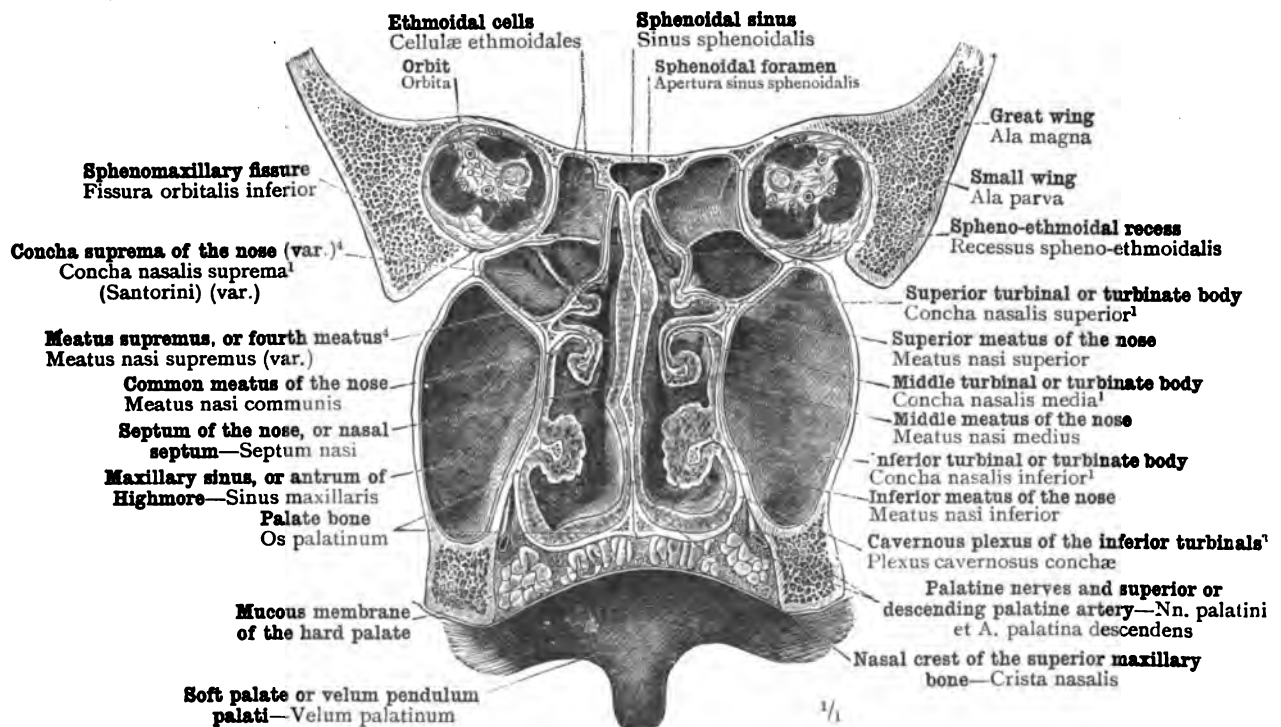


FIG. 1476.—CORONAL SECTION THROUGH THE POSTERIOR PART OF THE NASAL FOSSÆ AND THE MAXILLARY SINUSES OR ANTRA OF HIGHMORE. THE POSTERIOR SEGMENT VIEWED FROM BEFORE. SPHENOIDAL FORAMINA.

¹ See note 5 to p. 944.

² See Appendix, note 535.

See Appendix, note 536.

⁴ See Appendix, note 537.

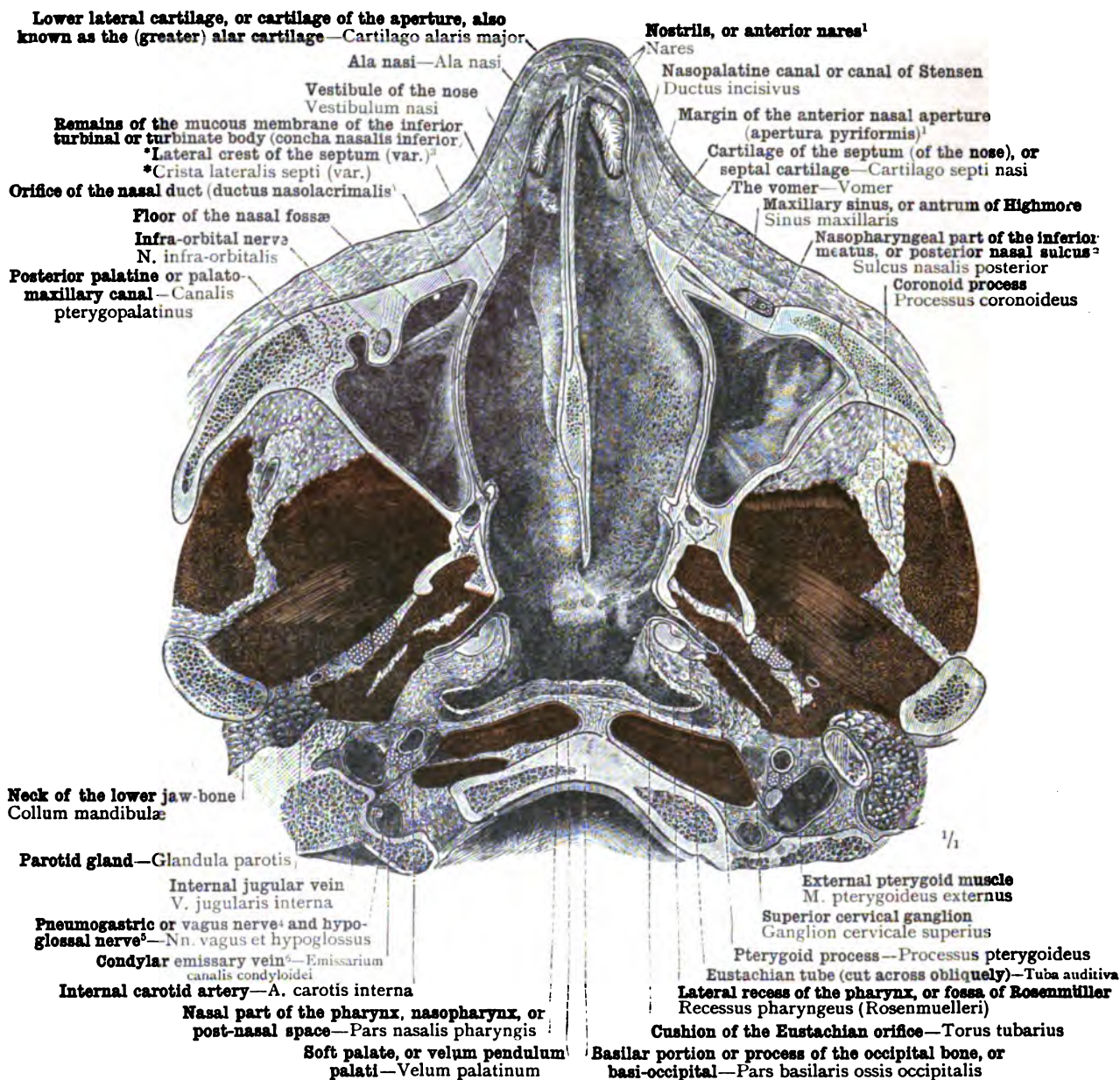


FIG. 1477.—HORIZONTAL SECTION THROUGH THE LOWER PART OF THE NASAL FOSSÆ AND THE MAXILLARY SINUSES, OR ANTRA OF HIGHMORE, AND THROUGH THE NASAL PART OF THE PHARYNX, NASOPHARYNX, OR POST-NASAL SPACE. THE LOWER SEGMENT VIEWED FROM ABOVE. THE SECTION PASSES THROUGH THE NECK OF THE LOWER JAW-BONE, AND THROUGH THE BASILAR PORTION OR PROCESS OF THE OCCIPITAL BONE, OR BASI-OCCIPITAL, IMMEDIATELY ABOVE THE FORAMEN MAGNUM. IN THE REGION OF THE NASAL FOSSÆ THE PLANE OF SECTION PASSES THROUGH THE ANTERIOR AND POSTERIOR EXTREMITIES OF THE INFERIOR TURBINAL OR TURBinate BODY; THE LOWER SEGMENT OF THE LATTER HAS BEEN REMOVED, SO THAT THE FLOOR OF THE NASAL FOSSÆ IS EXPOSED THROUGHOUT ITS WHOLE EXTENT AS WELL AS THE LOWER PART OF THE OUTER WALL. ON THE LEFT SIDE OF THE SEPTUM OF THE NOSE A *LATERAL CREST; *CRISTA LATERALIS SEPTI (VARIETY—see Appendix, note 556), IS MET WITH. IN THE NASOPHARYNX THE SECTION TRAVERSES ON EACH SIDE THE PHARYNGEAL ORIFICE OF THE EUSTACHIAN TUBE, THE CUSHION OF THE EUSTACHIAN ORIFICE (TORUS TUBARIUS), AND THE LATERAL RECESS OF THE PHARYNX, OR FOSSA OF ROSENMÜLLER.

¹ See note 3 to p. 942.

² See Appendix to Part IV., note 4.

³ See Appendix, note 555.

⁴ Tenth cranial nerve in Soemmerring's enumeration; second trunk of the eighth cranial nerve in that of Willis.

⁵ Twelfth cranial nerve in Soemmerring's enumeration, ninth in that of Willis; also known as the lingual motor nerve.

⁶ See Appendix to Part V., note 201.

Cavum nasi—The nasal fossæ.

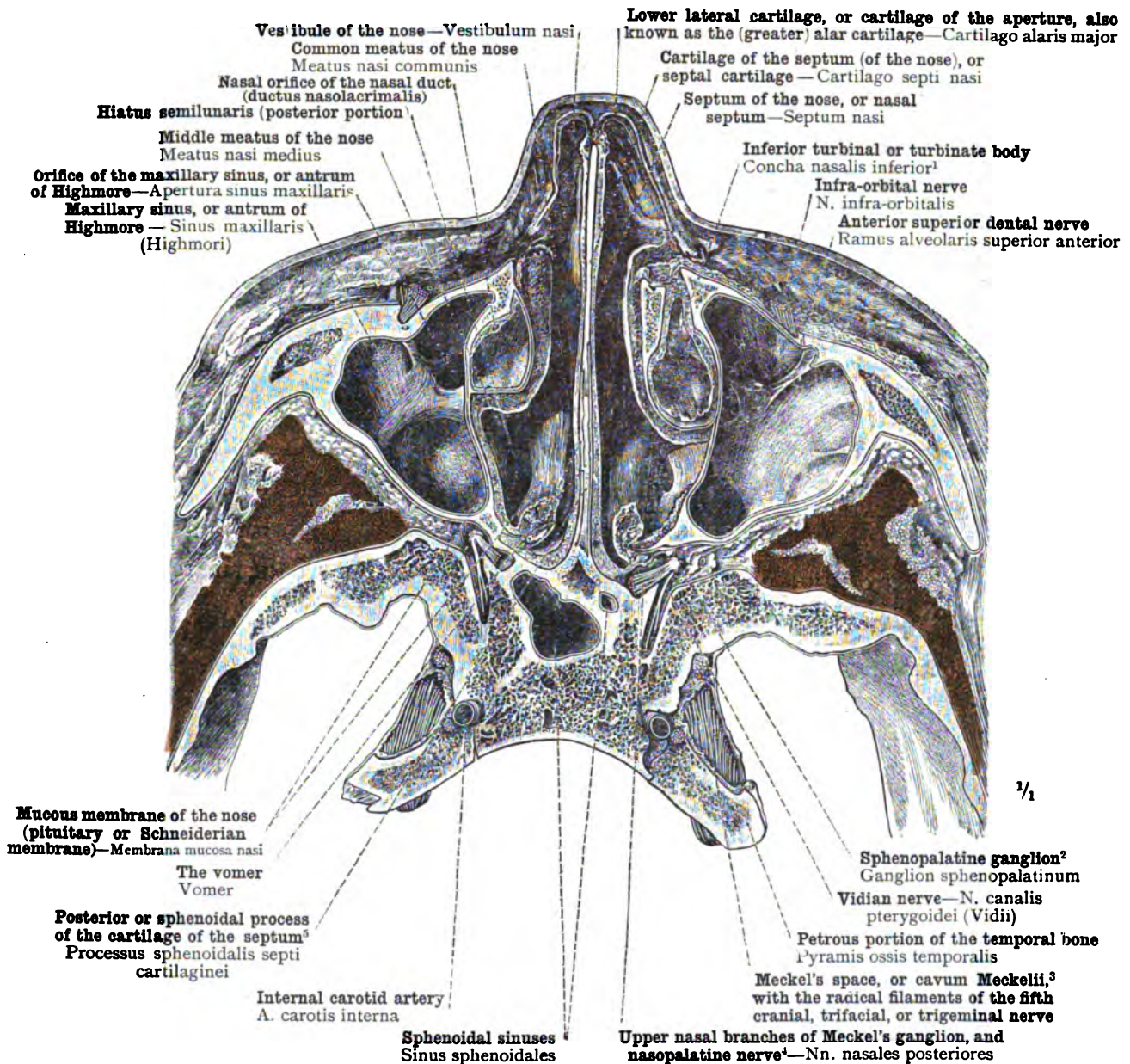


FIG. 1478.—OBLIQUE SECTION THROUGH THE NASAL FOSSÆ, DESCENDING AS IT PASSES FORWARDS, IN A PLANE ALMOST PARALLEL WITH THAT OF THE INFERIOR WALLS OF THE ORBITS. THE UPPER SEGMENT VIEWED FROM BELOW. BEHIND, THE SECTION SHOWS THE MIDDLE MEATUS; IN FRONT, THE INFERIOR MEATUS AND THE VESTIBULE OF THE NOSE. OF THE ACCESSORY CAVITIES OF THE NOSE, THE MAXILLARY SINUSES OR ANTRA OF HIGHMORE ARE CUT ACROSS IN THEIR GREATEST WIDTH, SO THAT THEIR ROOFS ARE FULLY DISPLAYED; WHILE THE SPHENOIDAL SINUSES ARE OPENED CLOSE TO THEIR LOWER EXTREMITIES. IN THE REGION OF THE SPHENOMAXILLARY FOSSA, THE UPPER PART OF WHICH TOGETHER WITH THE SPHENOPALATINE FORAMEN, FORAMEN SPHENOPALATINUM, AND THE ANTERIOR HALF OF THE VIDIAN OR PTERYGOID CANAL, CANALIS PTERYGOIDEUS (VIDII), APPEARS IN THE PLANE OF SECTION, THE SPHENOPALATINE GANGLION, GANGLION SPHENOPALATINUM,² THE VIDIAN NERVE, NERVUS CANALIS PTERYGOIDEI, AND THE PROXIMAL PORTIONS OF THE UPPER NASAL BRANCHES OF THE SPHENOPALATINE GANGLION AND THE NASOPALATINE NERVE, NN. NASALES POSTERIORES (see Appendix, note ⁴⁵⁰), ARE VISIBLE.

¹ See note 5 to p. 944.

³ See Appendix, note 558.

² Known also as *Meckel's ganglion* and as the *nasal ganglion*.

⁴ See Appendix, note 450.

⁵ See note 3 to p. 943.

Cavum nasi—The nasal fossæ.

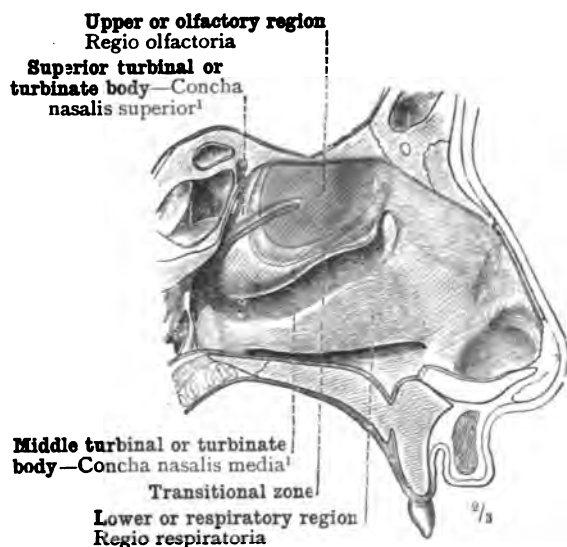


FIG. 1479.—LATERAL WALL OF THE LEFT NASAL FOSSA.

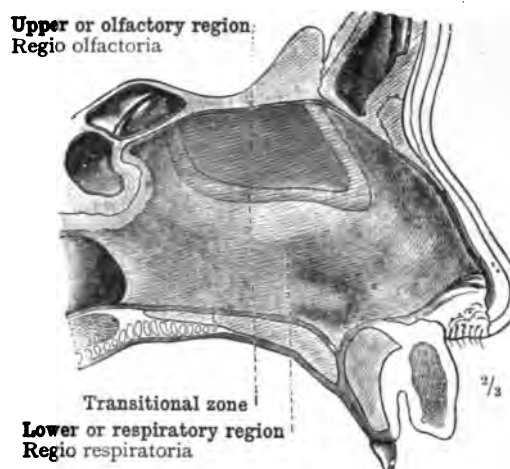


FIG. 1480.—MESIAL WALL OF THE RIGHT NASAL FOSSA.

THE DELIMITATION OF THE UPPER OR OLFACTORY AND THE LOWER OR RESPIRATORY REGIONS OF THE NOSE, WITH THE TRANSITIONAL ZONE, WHICH VARIES GREATLY IN DIFFERENT INDIVIDUALS. WITH REGARD TO THE RADIATION OF THE OLFACTORY NERVES, COMPARE FIGS. 1302 AND 1303.

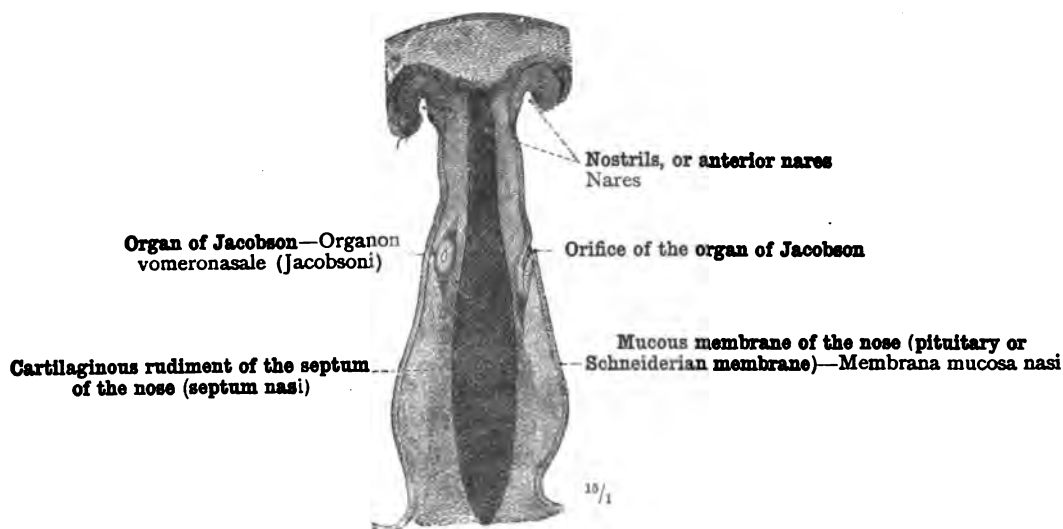


FIG. 1481.—THE ORGAN OF JACOBSON, ORGANON VOMERONASALE, OF A HUMAN FÆTUS IN THE FOURTH MONTH (MONTHS OF FOUR WEEKS EACH), HAVING A BODY-LENGTH OF 8·8 CENTIMETRES (3·465 INCHES), AS SEEN IN A HORIZONTAL SECTION THROUGH THE LOWER PORTION OF THE NASAL SEPTUM. ON THE LEFT SIDE THE CANAL IS DIVIDED OBLIQUELY; ON THE RIGHT SIDE ITS ORIFICE APPEARS IN THE PLANE OF SECTION.

¹ See note 5 to p. 944.

Cavum nasi—The nasal fossæ.

ORGANON TACTUS,
INTEGUMENTUM COMMUNE

THE ORGAN OF TOUCH,
THE SKIN

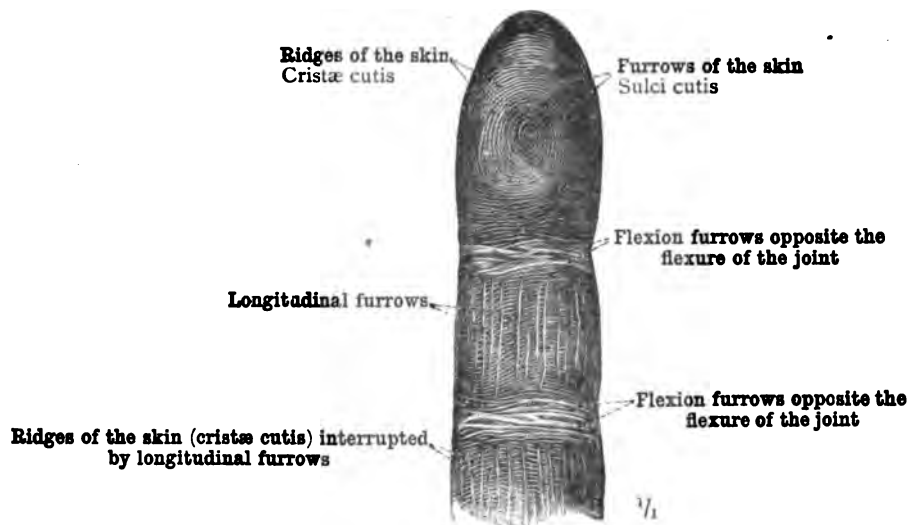


FIG. 1482.—THE FURROWS AND RIDGES OF THE SURFACE OF THE SKIN, REPRODUCED FROM AN IMPRESSION OF THE PALMAR SURFACE OF THE MIDDLE FINGER.



FIG. 1483.—THE FURROWS AND RIDGES OF THE TRUE SKIN, CUTIS VERA, OR CORIUM, ON THE PALMAR SURFACE OF ONE OF THE FINGERS, THE EPIDERMIS HAVING BEEN REMOVED. DRAWN WITH THE AID OF THE STEREO-SCOPIC MICROSCOPE. ARRANGEMENT OF THE PAPILLÆ AND OF THE EFFERENT DUCTS OF THE SUDORIFEROUS GLANDS OR SWEAT GLANDS.

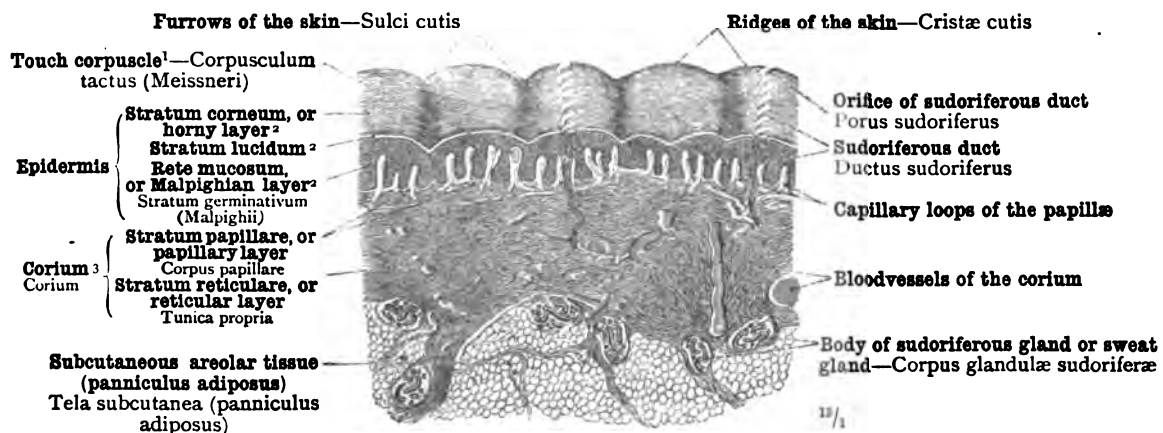


FIG. 1484.—VERTICAL SECTION THROUGH THE SKIN, CUTIS, OF THE FINGER-TIP. THE LAYERS OF THE EPIDERMIS² AND OF THE CORIUM.³ THE SUBCUTANEOUS AREOLAR TISSUE, TELA SUBCUTANEA. THE SUDORIFEROUS OR SWEAT GLANDS.

The bloodvessels have been injected with red-coloured gelatine.

¹ See Appendix, note 394.

² See Appendix, note 559.

³ The *corium* is also known as the *derma*, *cutis vera*, or *true skin*.

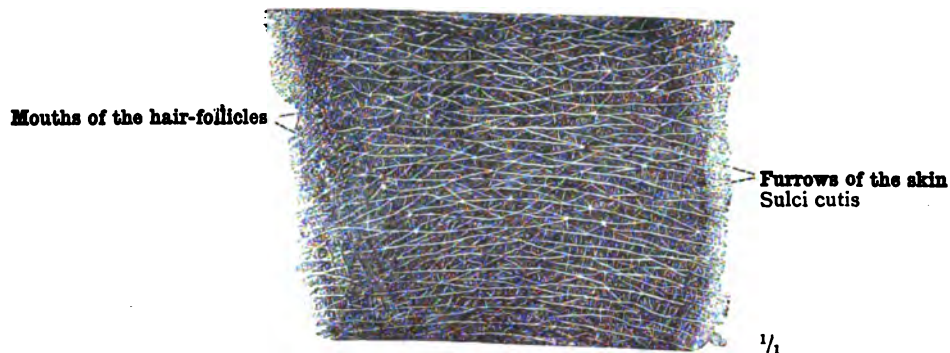


FIG. 1485.—THE FURROWS OF THE SKIN AND THE AREAS WHICH THESE FURROWS DELIMIT, REPRODUCED FROM AN IMPRESSION OF THE DORSAL SURFACE OF THE WRIST.

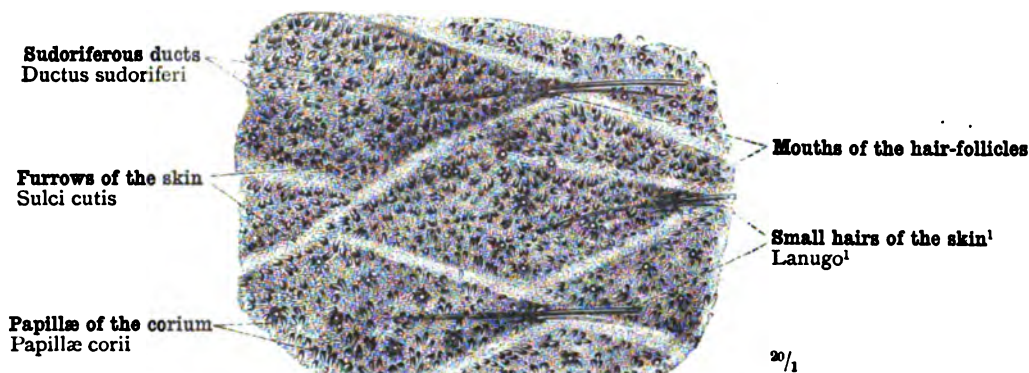


FIG. 1486.—THE FURROWS OF THE SKIN AND THE AREAS WHICH THESE FURROWS DELIMIT ON THE DORSAL SURFACE OF THE WRIST, AS DISPLAYED ON THE CORIUM WHEN THE EPIDERMIS HAS BEEN REMOVED. DRAWN WITH THE AID OF THE STEREOSCOPIC MICROSCOPE. THE ARRANGEMENT OF THE PAPILLÆ AND OF THE EFFERENT DUCTS OF THE SUDORIFEROUS GLANDS OR SWEAT GLANDS.

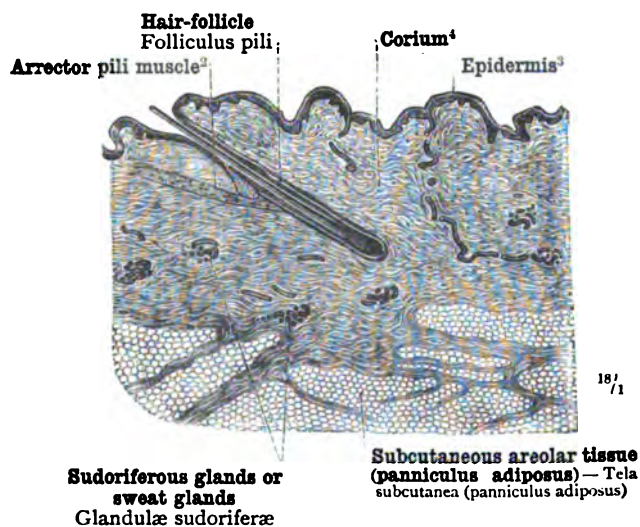


FIG. 1487.—VERTICAL SECTION THROUGH THE SKIN, CUTIS, OF THE TRUNK IN THE REGION OF THE ARCH OF THE RIBS. ONE OF THE SMALL HAIRS OF THE SKIN IS SEEN IN LONGITUDINAL SECTION. SUDORIFEROUS GLANDS OR SWEAT GLANDS AND THEIR EFFERENT DUCTS.

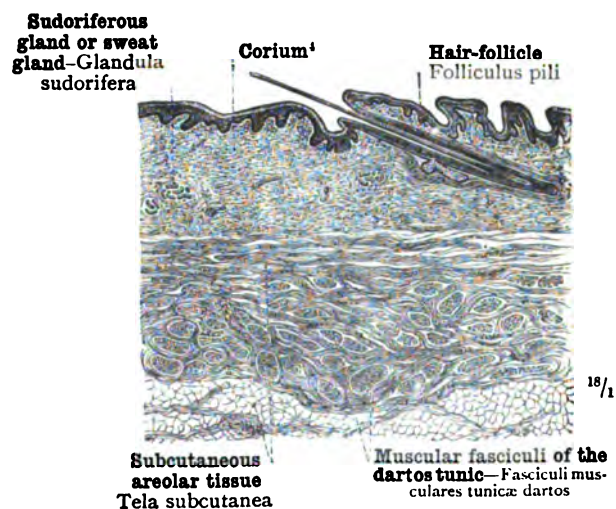


FIG. 1488.—VERTICAL SECTION THROUGH THE SKIN, CUTIS, AND THE DARTOS TUNIC, TUNICA DARTOS, OF THE SCROTUM. THE MUSCULAR FASCICULI OF THE LATTER ARE CUT ACROSS. ONE OF THE PUBIC HAIRS IS SEEN IN LONGITUDINAL SECTION. SUDORIFEROUS GLANDS OR SWEAT GLANDS.

¹ Regarding the German use of the term *lanugo*, see Appendix, note 5³.

² By Macalister named *erector pili muscle*, but the form used in the text is that most generally employed.

³ See Appendix, note 559.

⁴ The *corium* is also known as the *derma*, *cutis vera*, or *true skin*.

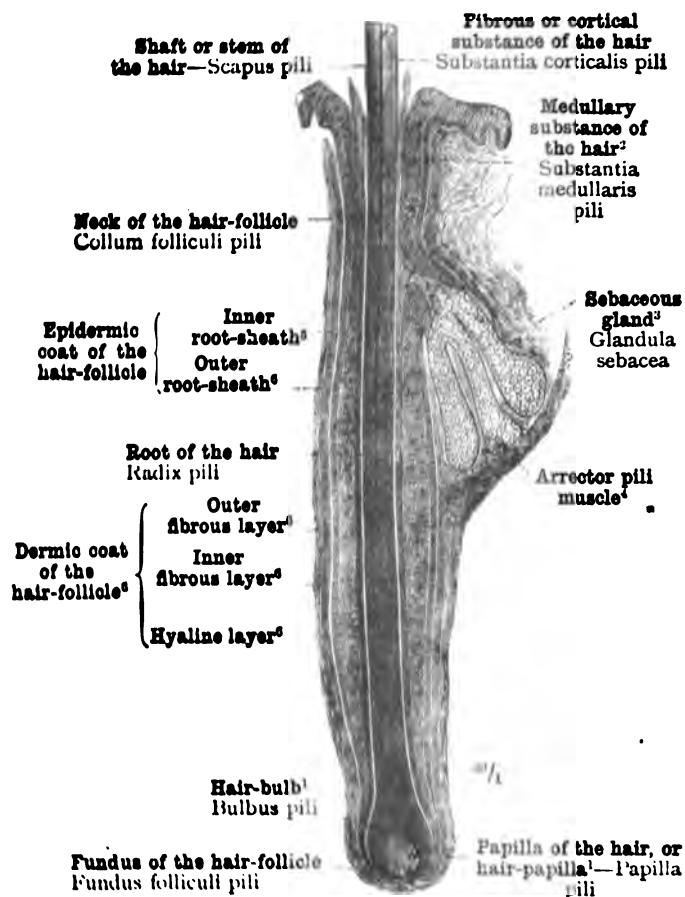


FIG. 1489. A HAIR OF THE HEAD (CAPILLUS) STILL IN COURSE OF GROWTH, WITH HAIR-BULB, BULBUS PILI,¹ IN LONGITUDINAL SECTION. HAIR-FOLLICLE, SERACEOUS GLAND OR FOLLICLE, GLANDULA SEBA-CEA, AND ARRECTOR OR ERECTOR PILI MUSCLE.

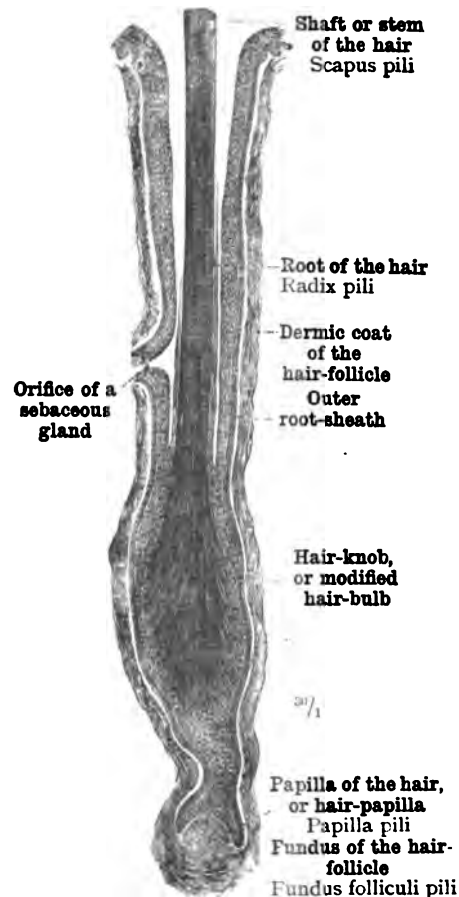


FIG. 1490.—A HAIR OF THE HEAD (CAPILLUS) ABOUT TO BE SHED, WITH HAIR-KNOB OR MODIFIED HAIR-BULB,¹ IN LONGITUDINAL SECTION. HAIR-FOLLICLE, AND PAPILLA OF THE HAIR THAT IS ABOUT TO DEVELOP IN PLACE OF THE OLD ONE.

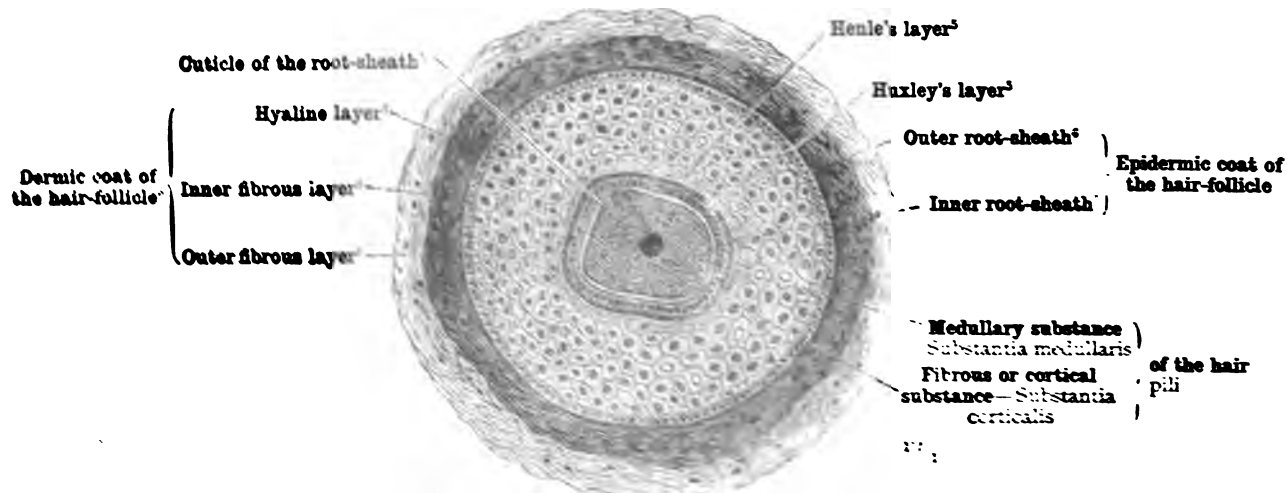


FIG. 1491. A MOUSTACHE HAIR WITH ITS HAIR-FOLLICLE IN TRANSVERSE SECTION. THE LAYERS OF THE HAIR-FOLLICLE, AND OF THE HAIR, ARE SHOWN.

¹ See Appendix, page 953.

² Also called more shortly the medulla of the hair.

³ See Appendix, page 953.

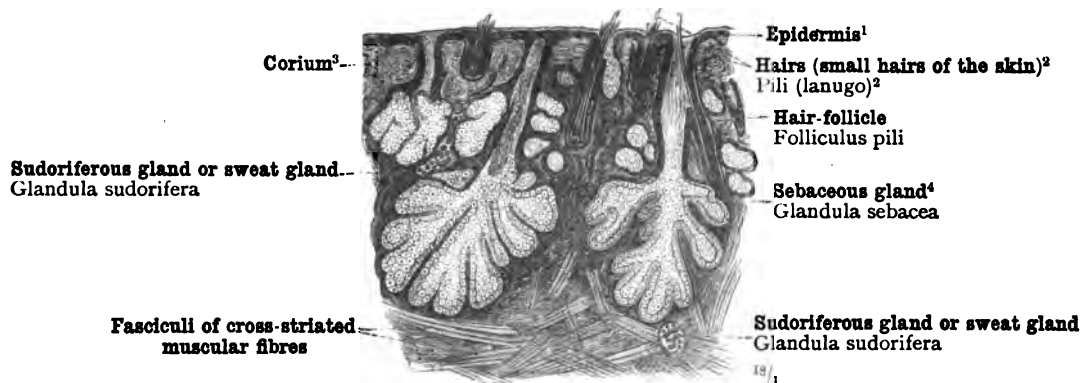


FIG. 1492.—VERTICAL SECTION THROUGH THE SKIN OF THE ALA NASI. SEBACEOUS GLANDS OR FOLLICLES, GLANDULÆ SEBACEÆ, WITH THE SMALL HAIRS OF THE SKIN, LANUGO (see Appendix, note 603). SUDORIFEROUS GLANDS OR SWEAT GLANDS, GLANDULÆ SUDORIFERÆ. CROSS-STRIATED MUSCULAR FIBRES ENTERING THE SKIN.

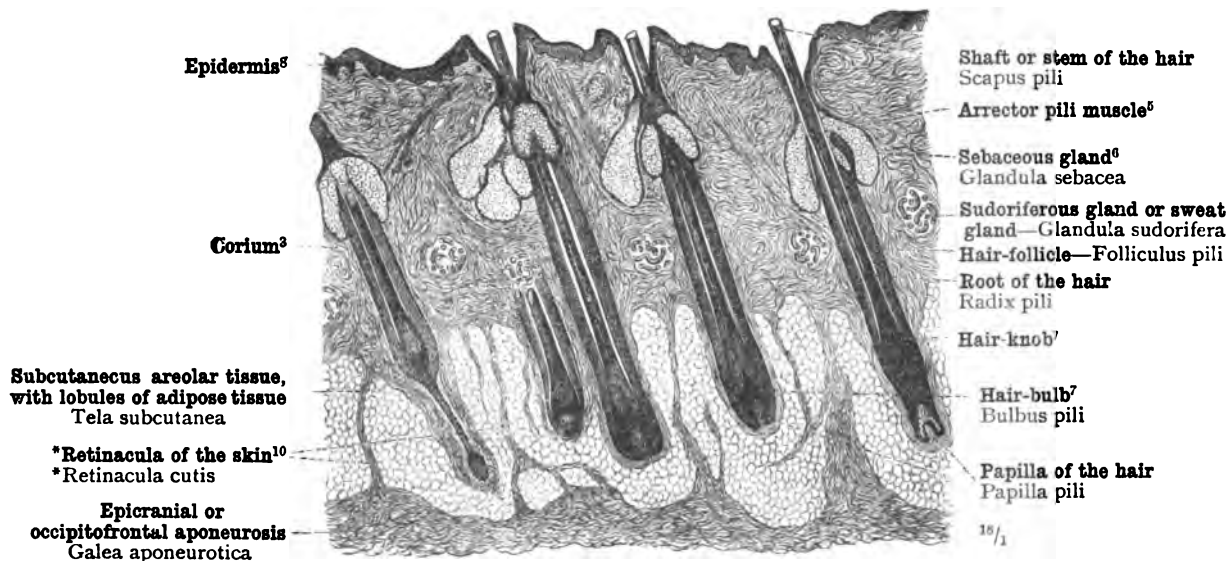


FIG. 1493.—VERTICAL SECTION THROUGH THE SKIN OF THE HEAD. HAIRS OF THE HEAD, CAPILLI, IN LONGITUDINAL SECTION, WITH SEBACEOUS GLANDS OR FOLLICLES AND MUSCLES OF THE HAIR-FOLLICLES, MUSCULI ARRECTORES VEL ERECTORES PILORUM. SUDORIFEROUS GLANDS OR SWEAT GLANDS.

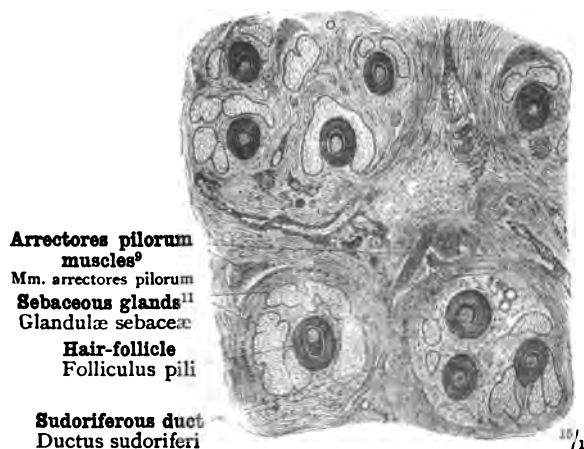


FIG. 1494.—HORIZONTAL SECTION THROUGH THE SKIN OF THE HEAD AT THE LEVEL OF THE SEBACEOUS GLANDS OR FOLLICLES. HAIR-FOLLICLES, FOLLICULI PILORUM, AND MUSCLES OF THE HAIR-FOLLICLES, MUSCULI ARRECTORES VEL ERECTORES PILORUM, IN OBLIQUE SECTION.

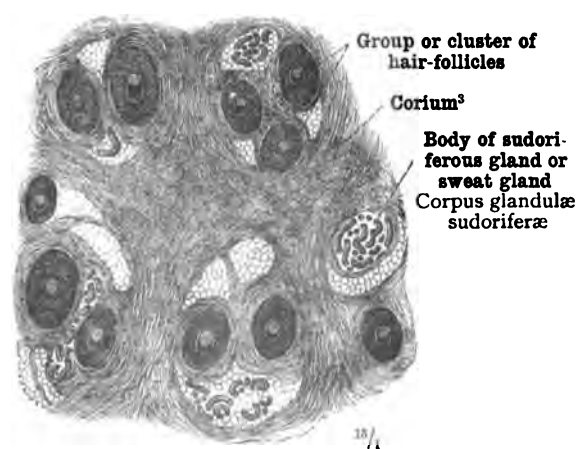


FIG. 1495.—HORIZONTAL SECTION THROUGH THE SKIN OF THE HEAD AT THE LEVEL OF THE SUDORIFEROUS GLANDS OR SWEAT GLANDS. HAIRS, CAPILLI, AND HAIR-FOLLICLES, FOLLICULI PILORUM, IN OBLIQUE SECTION.

1 See Appendix, note 559.

2 Regarding the German use of the term *lanugo*, see Appendix, note 513.

3 The *corium* is also known as the *dermis cutis vera*, or *true skin*.

4 Or *sebaceous follicle*.

5 See Appendix, note 560.

6 Or *sebaceous follicle*.

7 See Appendix, note 552.

8 See Appendix, note 552.

9 By Macalister named *erectores pilorum muscles*, but the form used in the text is that most generally employed.

10 See Appendix, note 563.

11 Or *sebaceous follicles*.

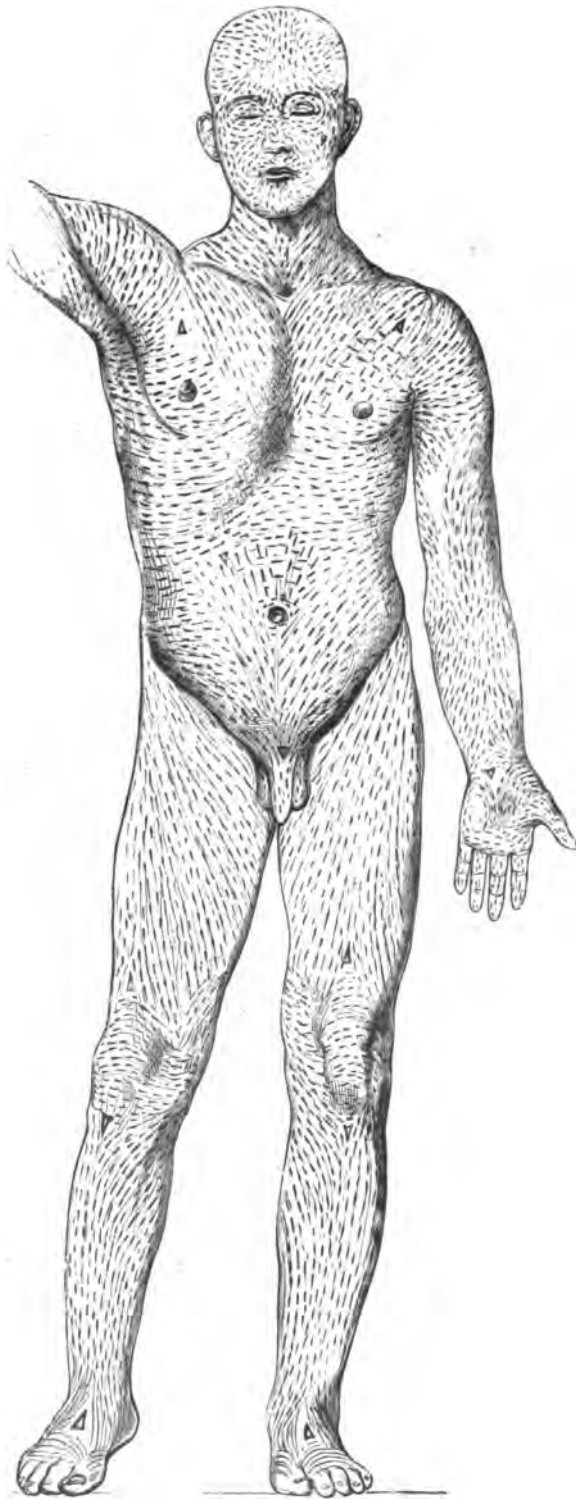


FIG. 1496.—ANTERIOR SURFACE.

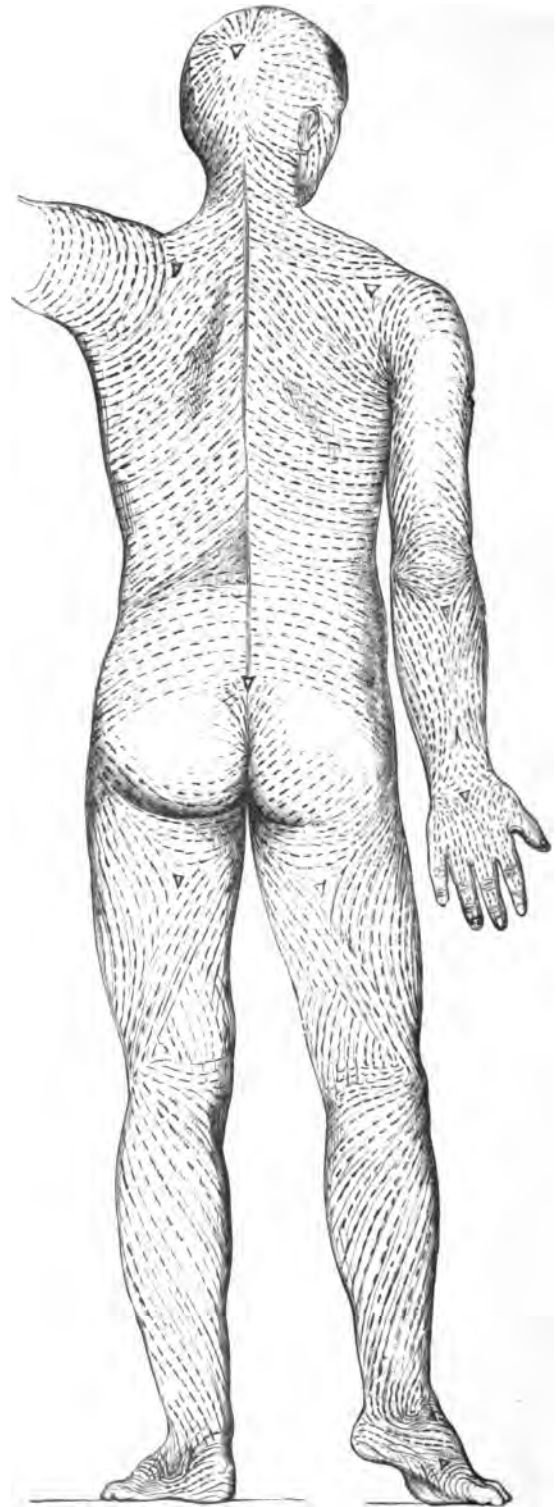


FIG. 1497.—POSTERIOR SURFACE.

THE GENERAL COURSE OF THE CONNECTIVE-TISSUE BUNDLES OF THE CORIUM, DETERMINED BY THE DIRECTION ASSUMED BY THE LINEAR CLEFTS MADE IN THE SKIN WHEN IT IS PUNCTURED BY A ROUND AWL.¹ (AFTER C. LANGER.)

¹ See Appendix, note 564.

Lines of Cleavage of the Skin.

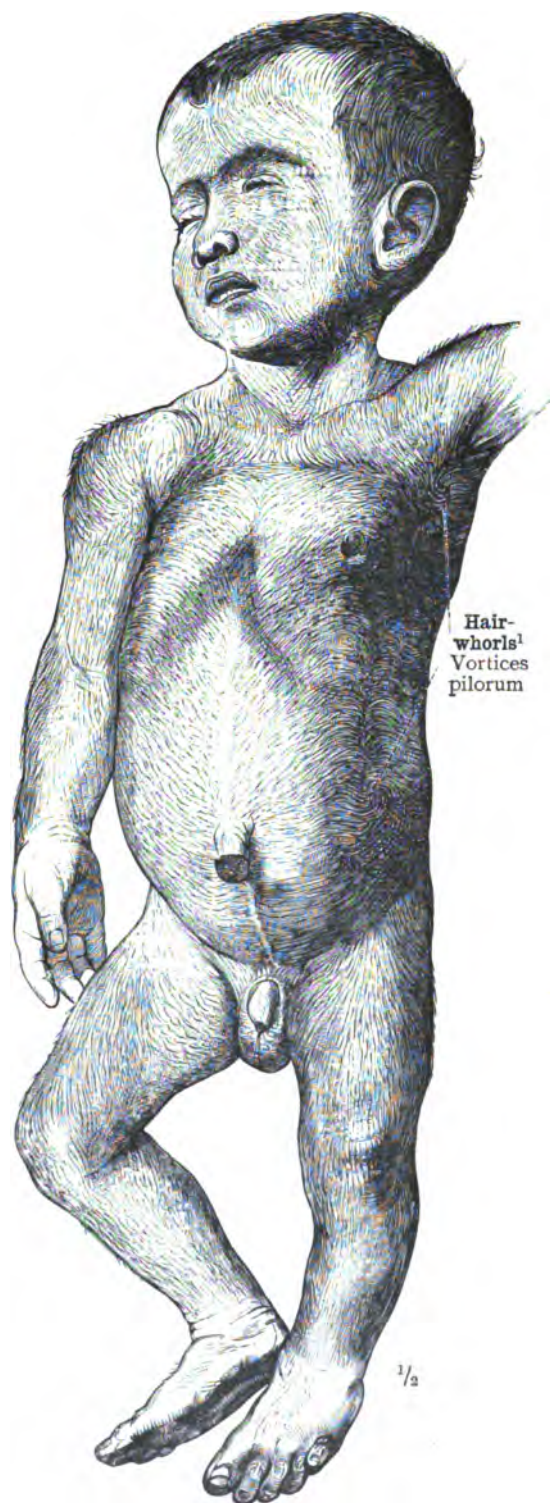


FIG. 1498.—ANTERIOR SURFACE.

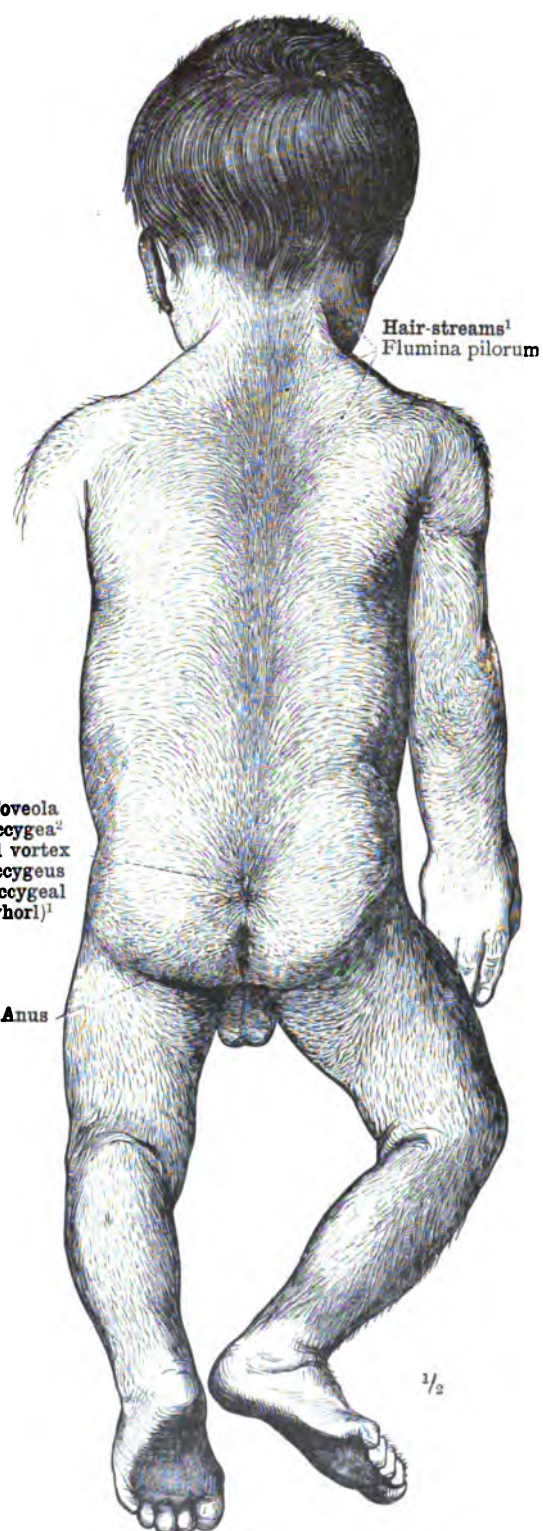


FIG. 1499.—POSTERIOR SURFACE.

THE DIRECTION OF THE HAIRS ON THE DIFFERENT PARTS OF THE BODY. FÆTUS IN THE NINTH MONTH OF INTRA-UTERINE LIFE (MONTHS OF FOUR WEEKS EACH).

¹ See Appendix, note 564.

² See note 3 to p. 528, in Part IV.

Hair-streams—Flumina pilorum.—Hair-whorls—Vortices pilorum (see note ¹ above).

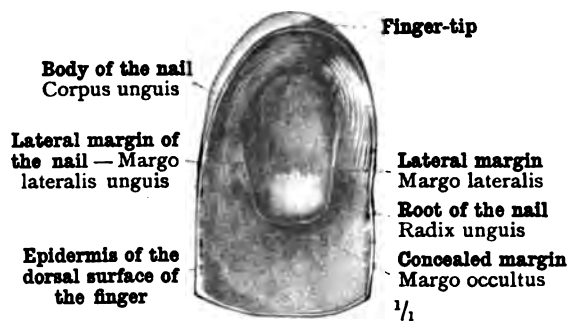


FIG. 1500.—THE FINGER-NAIL, WITH THE ADJOINING AREA OF EPIDERMIS, DETACHED FROM THE CORIUM BY THE ACTION OF SUPERHEATED STEAM. SEEN FROM THE CONCAVE SIDE.

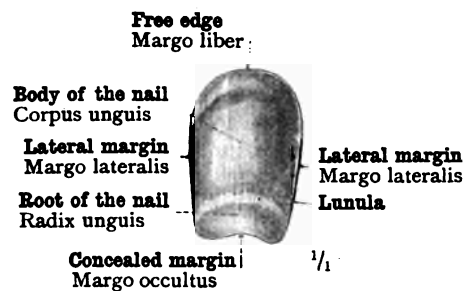


FIG. 1501.—FINGER-NAIL, COMPLETELY ISOLATED. SEEN FROM THE CONVEX SIDE.



FIG. 1502.—THE MATRIX OF THE NAIL OR NAIL-BED, MATRIX UNGUIS, WITH THE NAIL-FOLD AND NAIL-WALLS, VALLUM UNGUIS,² DISPLAYED BY THE REMOVAL OF THE EPIDERMIC PORTION OF THE NAIL OR NAIL PROPER AND THE SURROUNDING EPIDERMIS.



FIG. 1503.—MATRIX OF THE NAIL OR NAIL-BED, WITH PARTLY OPENED MARGINAL GROOVE OF THE NAIL-BED, SULCUS MATRICIS UNGUIS.

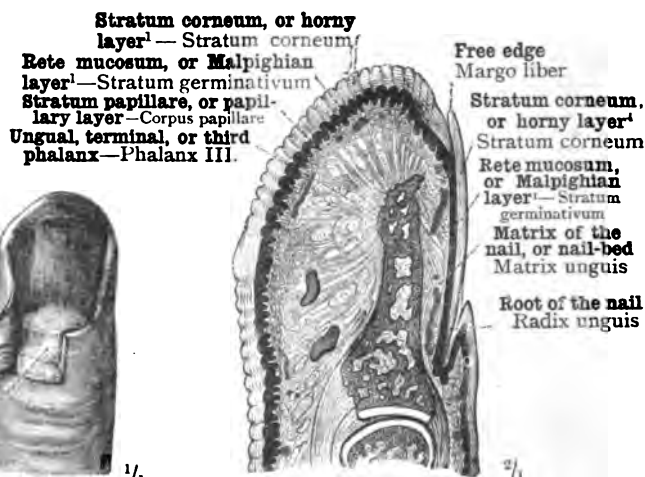


FIG. 1504.—LONGITUDINAL SECTION THROUGH THE NAIL, AND THE TERMINAL PORTION OF THE MIDDLE FINGER.

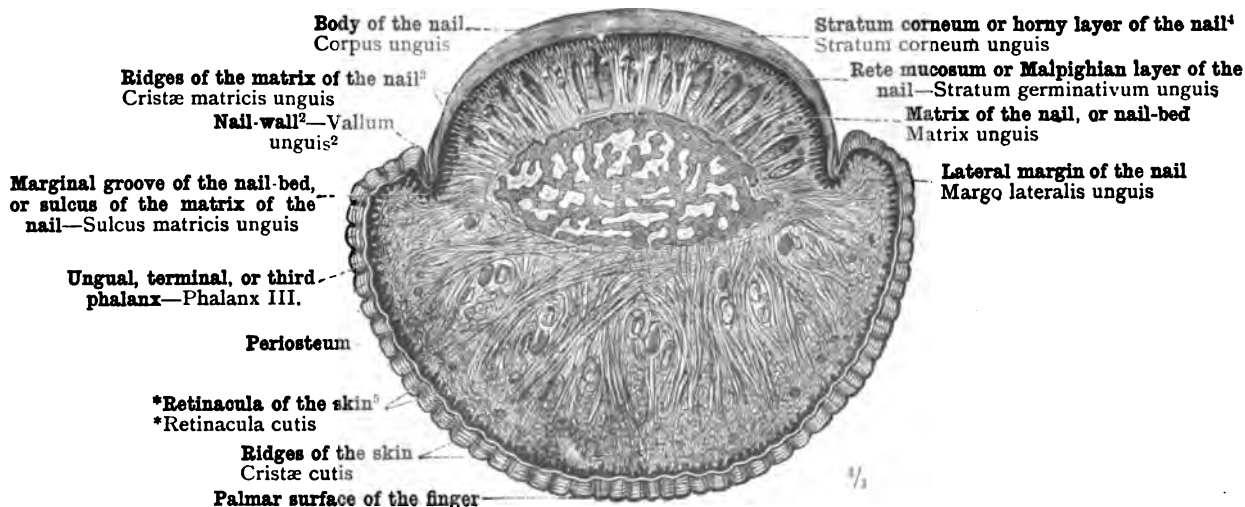


FIG. 1505.—TRANSVERSE SECTION THROUGH THE NAIL AND THE TERMINAL PORTION OF THE RING FINGER.

¹ See Appendix, note 559.

² See Appendix, note 566.

³ The ridges of the matrix of the nail are, according to Quain (*op. cit.*, vol. iii., part iii., p. 418). "sometimes, and perhaps more suitably, named *laminae*."

⁴ See Appendix, note 567.

⁵ See Appendix, note 563.

APPENDIX TO PART VI.

NOTES BY TRANSLATOR

³¹⁸ *Neurilemma* (Figs. 1125, 1126, p. 746).—This forms the outermost covering of the medullated nerve fibres, and exhibits nuclei disposed at regular intervals along its inner surface. Since similar nuclei are seen also on the surface of the non-medullated nerve fibres, it is generally believed that these latter fibres also are invested with neurilemma (see Fig. 1126). As Ranvier, however, pointed out, it is difficult if not impossible to demonstrate the supposed sheath of the non-medullated fibres, and for this reason some histologists believe that the nuclei are imbedded in the peripheral layer of the fibre itself, and that the sheath is non-existent. The *neurilemma* or *neurolemma* (Quain prefers the latter spelling, which is, however, less often used than the former) is also known as the *primitive sheath*, or *sheath of Schwann*. It may be well to point out that the term *neurilemma* was formerly used to denote "the connective-tissue sheath wrapping round the whole nerve" (Foster), or "the connective-tissue sheath of the funiculus [see note ³²⁰ below], which is now known as the perineurium" (Quain); but, as Foster remarks ("Physiology," 5th ed., p. 115), "it seemed undesirable to use two such analogous terms as sarcolemma and neurilemma for two things obviously without analogy, and hence neurilemma is now used for that part of the nerve which is obviously analogous to the sarcolemma in muscle, viz., the sheath of the fibre."

³¹⁹ *Medullated and Non-Medullated Nerve Fibres* (Figs. 1124-1126, p. 746).—Nerve fibres are distinguished as *medullated* and *non-medullated* respectively according to the presence or absence of the *medullary sheath* (*white substance* of Schwann). Medullated fibres are known also as *double-bordered*, *double-contoured*, or *white fibres*; non-medullated fibres are known also as *pale fibres*; often, also, after their discoverer, they are termed *fibres of Remak*.

³²⁰ *Epineurium, Perineurium, and Endoneurium* (Fig. 1127, p. 746).—The peripheral nerves are invested by a *common sheath* of fibrous tissue (formerly known as the *cellular sheath*); from this sheath, septa of connective tissue pass inwards between the *secondary bundles* or *funiculi*, of which all but the very smallest peripheral nerves contain a plural number. The common sheath and the septa just mentioned constitute the *epineurium*, in which the minute vessels and nerves (*nervi nervorum*) for the nutrition and sensibility of the nerve trunk ramify. Each *funiculus* or *secondary bundle* contains a variable number of nerve fibres, and has therefore no determinate size; it is enclosed in a tubular sheath of connective tissue, known as the *perineurium*. Whereas the epineurium is fibrous in character, the perineurium is distinctly lamellar, and may be separated in the form of a tube from the bundle of fibres which it invests. From its inner surface septa pass inwards among the nerve fibres, dividing them into *primary bundles*, and these septa are continuous with, and are usually described as forming part of, the *endoneurium*, which, for the rest, consists of delicate fibrils of connective tissue, for the most part longitudinally disposed, enmeshing and supporting the individual nerve fibres. In the larger nerve trunks, which contain numerous funiculi, these branch and reunite in a plexi-

form manner. The *epineurium* and *perineurium* were formerly known indifferently as *neurilemma*; the reason for abandoning this nomenclature is given at the end of note ³¹⁸ above. The author does not make use of the term *epineurium*, and would seem in these figures to disregard altogether the *common sheath* of the nerves. Fig. 1127 is said to depict "a portion of the median nerve." As this "portion" is surrounded by laminated perineurium, it is, doubtless, part of a single funiculus, dissected out of the nerve trunk.

³²¹ *Recent Advances in the Histology of Nervous Tissue* (Figs. 1128 to 1131, p. 747).—As a result of recent investigations into the minute structure of the nervous system, more especially those of Golgi and Ramón y Cajal, certain new conceptions regarding that structure have arisen, accompanied by a new nomenclature, in exposition of which I quote the following passage from the fourth edition of Halliburton's "Physiology," pp. 195, 196: "The whole nervous system consists of nerve cells and their branches, supported by neuroglia in the central nervous system, and by connective tissue in the nerves. Some of the processes of a nerve cell break up almost immediately into smaller branches, ending in arborescences of fine twigs; these branches, which used to be called protoplasmic processes, are now termed *dendrons*, and the fine twigs *dendrites*; one branch becomes the long axis-cylinder of a nerve fibre, but it also ultimately terminates in an arborization. It is called the *axis-cylinder process*, or, more briefly, the *axon*. The term *neuron* is applied to the complete nerve unit—that is, the body of the cell, and all its branches. Some observers have supposed that the axis-cylinder process is the only one that conducts nerve impulses, the dendron being rootlets which suck up nutriment for the nerve cell. This exclusive view has not, however, been generally accepted; the dendrons may be nutritive, but it is believed that they also, like the rest of the nerve unit, are concerned in the conduction of nerve impulses. A strong piece of evidence in this direction is the fact that the fibrils of the axis-cylinder may be traced through the body of the cell into the dendrons.

"The next idea which it is necessary to grasp is, that each nerve unit (cell plus branches of both kinds) is anatomically independent of every other nerve unit. There is no anastomosis of the branches from one nerve cell with those of another; the arborescences interlace and intermingle, and nerve impulses are transmitted from one nerve unit to another, but not by continuous structures. The impulses are transmitted through contiguous, but not through continuous, structures. A convenient expression for the intermingling of arborescences is *synapse* (literally, a clasping)." The axis-cylinder process, or axon, was originally supposed to be unbranched, but Golgi's chromate of silver method, by means of which the nerve fibrils may be followed to their finest ramifications, has demonstrated that this view was erroneous, and that lateral branches invariably pass from the axon into the adjacent nerve tissue. These branches are known as *collaterals*.

³²² *Plexus and Network* (Fig. 1132, p. 748).—I employ the phrase *terminal network* as the literal translation of the German word *Endnetz*, which is used by the author in the original. It is, however, a moot point whether this terminal ramification of the sensory nerves of the cornea is a true *network* or merely a *plexus*. The fact that the slender filaments exhibit no varicosities at their points of junction suggests rather the latter conclusion. The distinction between a *nervous network* and a *nervous plexus* is explained by Quain in the following terms ("Anatomy," 10th ed., vol. i., part ii., p. 347): "In the former an actual fusion of the ultimate fibrillæ which result from the division of the axis-cylinders of the nerves is assumed to take place, whereas in the latter, although there may appear to be an intimate union between the different nerves which enter into the plexus, this union does not extend to the ultimate elements of the nerve fibre; in other words, although fibres or parts of fibres (fibrils) may be given and received by the several nerves to and from one another, these fibres (in the case of the larger plexuses) or fibrils (in the microscopic plexuses) remain completely distinct, although they may run in close juxtaposition. Nervous plexuses are of very common occurrence, both those of the larger sort which have long been recognised by anatomists, and the smaller microscopic plexuses which are often found near the endings, both of some centripetally conducting and of some centrifugally conducting nerves. But nervous networks are far less frequent than has been supposed, although they were until lately described as a mode of nerve termination not by any means rare; and, indeed, their existence is now doubted altogether by some histologists."

³²³ *Free Ends of Corneal Nerves* (Fig. 1133, p. 748).—It is a disputed point whether sensory nerve terminals ever actually penetrate the cells of the tissue to which they are distributed. In his description of Fig. 1133, the author shelves the question by stating that "the nerve fibrils end freely in the epithelium" (*freie Endigung der Nervenfibrillen im Epithel*), which may signify either *between* the cells of the epithelium or *in the interior* of these cells. Concerning this matter Quain writes (*op. cit.*, vol. iii., part iii., p. 23): "An actual connexion of these nerves with the corpuscles of the cornea probably never occurs; although, since the fine nerve fibrils run in the anastomosing cell spaces, they come into close connexion with the corpuscles and their processes, and they have therefore been described by some observers as being actually continuous with the latter." (The passage as written is, unfortunately, to some degree ambiguous, owing to the repetition of the word *connexion* in a changed sense; it is obvious, however, that in the second instance *contact* is denoted.)

³²⁴ *Touch Corpuscles* (Fig. 1134, p. 749).—Also known as *tactile corpuscles* (*corpuscula tactis*) or *touch bodies*. In Germany they are distinguished as *Meissner'sche Tastkörperchen*, Meissner, with Thomas Wagner, having been their discoverer.

³²⁵ *Pacinian Corpuscles* (Fig. 1137, p. 749).—Called also *Pacinian bodies*, and sometimes *corpuscles of Vater*. They were described by Vater in 1741; but their internal structure and their necessary connexion with nerve fibres was first demonstrated, at a much later date, by Pacini.

³²⁶ *Henle's Sheath* (Figs. 1134 to 1137, p. 749).—This sheath is not mentioned by the author. It is derived from the *perineurium* (see note ³²⁰ above), which accompanies the nerves as they subdivide, and ultimately, in the finest branches, becomes reduced to a single lamella of connective tissue, covered within and without by a pavement epithelium (endothelium). Its importance in this connexion depends on the fact that the nucleated connective-tissue capsules of all the tactile end-organs are con-

tinuous with and derived from the sheath of Henle. A prolongation of this sheath passes over the motorial end-organs, also forming a nucleated covering called by Kühne the *telolemma* (*epilemma* according to Macalister); further, the *neurilemma* or *sheath of Schwann* being continuous with the sarcolemma, the motorial end-organ has a second covering within that derived from the sheath of Henle; this is sometimes called the *endolemma*.

³²⁷ *Olivary Body* (Figs. 1141, 1143, p. 752).—This is called by Quain the *lower olive*. As far as human descriptive anatomy is concerned, the qualification is perhaps superfluous, the *superior olivary nucleus*, from which it is thus distinguished, being situated in man deep within the substance of the pons Varolii, and not giving rise to any superficial prominence similar to that from which the *lower olive* derives its name. In their internal structure, however, and in the size of their cells, the *superior* and the *inferior olive* exhibit, even in man, close resemblances; and in some animals, in which the superior olivary nucleus is proportionately much larger than in the case of the human brain, the outline of this body is distinctly sinuous, a fact which makes the similarity to the *corpus dentatum* of the inferior olive even more striking.

³²⁸ *Pyramids* (Fig. 1141, p. 752).—These are sometimes called the *anterior pyramids* to distinguish them from the *posterior pyramids*, an alternative name (seldom employed) for the *funiculi graciles* with their *clavae*.

³²⁹ *Enlargements of the Spinal Cord* (Figs. 1141, 1142, p. 752).—These are variously named (1) *cervical* and *lumbar*, from the regions of the cord in which they are respectively situated; (2) *brachial* and *crural*, from the functions they respectively subserve; and (3) *upper* and *lower*, from their relative position. The names first mentioned are those in general use.

³³⁰ *White Columns of the Spinal Cord* (Figs. 1141 to 1143, p. 752).—The posterior grey column (posterior horn—see note ³²⁹ below) almost reaches the surface of the cord along the posterolateral groove (see note ³³¹ below) and the line of attachment of the posterior root, thus distinctly separating the *posterior white column* from the rest of the cord; the anterior extremity of the anterior grey column (anterior horn), on the other hand, is some distance from the surface, and the bundles of the anterior nerve roots do not emerge along a defined vertical line, so that there is no distinct boundary between the *anterior* and the *lateral white column*. For this reason many anatomists divide the white matter of the cord into *posterior* and *anterolateral white columns* only.

³³¹ *Medulla Oblongata* (Fig. 1142, p. 752).—Quain gives *spinal bulb* as an alternative name, but the term is not in use; it is a translation of the Latin *bulbus rhachiticus*, a name used by Meckel.

³³² *Posterior Median Groove* (Figs. 1141, 1142, p. 752).—It will be noticed that the author speaks of the *sulcus medianus posterior* in contradistinction to the *fissura mediana anterior*. In England the terms *anterior* and *posterior median fissure* are in common use. The author's terminology is, however, to be preferred, for the anterior cleft only, though much shallower than the posterior, is a true fissure, both sides of which are lined with pia mater. Along the posterior median line of the cord is a shallow groove merely, the *posterior median groove*, from the bottom of which a cleft extends inwards nearly to the centre of the cord. This cleft is occupied, not by the pia mater, but by a thin stratum of connective tissue and bloodvessels connected with that membrane, known as the *posterior median septum* (see Fig. 1149, p. 755).

³²⁸ (Fig. 1143, p. 752.) The terms *pars cervicalis*, *pars thoracalis*, and *pars lumbalis* (*cervical*, *dorsal*, and *lumbal* portions of the cord), as used by the author, refer to the divisions of the cord occupying respectively the cervical, dorsal, and lumbal portions of the spinal canal, and have no bearing on the functional divisions of the cord, represented by the *cervical* or *brachial* and *lumbal* or *crural enlargements*, and the intermediate *dorsal portion* of the cord (see note ³²⁹ above).

³³⁴ *Medulla Spinalis*.—The term *spinal marrow*, a literal translation of the Latin term *medulla spinalis*, is still found in the textbooks as an alternative name for the *spinal cord*.

³³⁵ *Sulcus Lateralis Anterior et Posterior; Sulcus Intermedius Anterior et Posterior* (Figs. 1144 and 1145, p. 753).—"An antero-lateral groove has sometimes been described in the line of origin of the anterior roots of the nerves, but usually has no real existence. The fibres of these roots, in fact, unlike the posterior, do not dip into the spinal cord in one narrow line, but spread over a space of some breadth" (Quain, *op. cit.*, vol. iii., part i., p. 7). The *postero-lateral groove*, on the other hand, is a clearly marked furrow corresponding with the line of attachment on each side of the posterior roots of the spinal nerves. (See also note ³³⁰ above.) In the upper part of the cord a furrow is seen on either side about 1 millimetre from the posterior median groove (see note ³²⁸ above); this, which is better marked in some individuals than in others, is known as the *posterior intermediate groove* (or *furrow*); it serves, in the cervical region, to mark off the *postero-mesial* from the *postero-lateral* column (see note ³⁴⁸ below); from the bottom of the groove an incomplete septum of connective tissues analogous to the posterior median septum, and known as the *posterior intermediate septum*, extends into the substance of the cord between the columns just named (see Fig. 1149, p. 755). An *anterior intermediate groove* (or *furrow*), *sulcus intermedius anterior*, is shown in Fig. 1144 as a variety.

³³⁶ *Fossa Rhomboidea* (Fig. 1145, p. 753).—According to Quain, this (or, strictly speaking, the term *fossa rhomboidalis*—see note ³³⁵ below) is an alternative name for the *fourth ventricle*, but by the author its signification is limited to the floor of that cavity. The part of the ventricle seen in Fig. 1145, viz., its pointed lower extremity, is known as the *calamus scriptorius*, on account of its resemblance to a writing-pen. (See also Fig. 1178, p. 768.)

³³⁷ *Tuberculum Cuneatum* (Ibid.).—"On a level with the adjoining clava of the funiculus gracilis, the enlarged part of the cuneate funiculus also, like that, exhibits a slight eminence, which is best marked in children, and has been called the *cuneate tubercle*" (Schwalbe, quoted by Quain, *op. cit.*, vol. iii., part i., p. 44).

³³⁸ **Terminal Ventricle* (Fig. 1146, p. 753).—"At the apex of the *conus medullaris* the central canal of the cord is considerably enlarged, to form what is known as the *ventriculus terminalis*, and below this, narrowing once more, it may be traced for some distance in the interior of the *filum terminale*" (Von Langer and Toldt's "Anatomy," 7th ed., p. 584). This term is not used by Quain or Macalister.

³³⁹ *Grey Columns of the Spinal Cord* (Fig. 1147, p. 754).—It is to some extent an innovation in English anatomical nomenclature to employ the term *column* in speaking of the grey matter. The author, it will be noted, distinguishes the *white columns* as *funiculi* from the *grey columns*, which he terms *columnæ*. In England the grey matter of the spinal cord is, as a rule, divided into three *horns*—*anterior* or *ventral*, *posterior* or *dorsal*, and *lateral horn*—on each side. Now, while this terminology expresses

accurately enough the appearance of the grey matter of the cord as seen in transverse section, it fails entirely to represent its tridimensional aspect, for which purpose the use of the term *column* is obviously the most appropriate. The word is already in common use for one section of the grey matter, viz., the *posterior vesicular column* of Lockhart Clarke (commonly spoken of as *Clarke's column*); Quain, further, as well as other authorities, speaks of various longitudinal tracts of grey matter rich in cells as *ganglionic* or *cell columns*; so that there is no valid objection to the substitution of the more accurate term, *columns*, for the more familiar term, *horns*, of the grey matter. Any possible confusion between the white and the grey columns of the respective anterior, lateral, and posterior regions of the cord can be avoided by the invariable addition of the qualifying adjective *white* or *grey* as the case may be. The alternative reform in the nomenclature, the adoption of the author's term *funiculus* in speaking of the white columns, appears to me to be a less desirable one, and less likely to be accepted.

³⁴⁰ *Veins of the Spinal Cord* (Fig. 1148, p. 754).—According to Quain, two median longitudinal veins, anterior and posterior, are the most important veins of the spinal cord. Von Langer and Toldt (whose nomenclature I have in this instance adopted) write as follows: "The veins of the spinal cord fall into two groups: the *external spinal veins*, *vena spinales externa anteriores et posteriores*, which accompany the arteries in front and behind the cord; and the *internal spinal veins*, *vena spinales interna*, which run in the substance of the cord beside the central canal; radiating branches connect these two systems of veins, and pass outwards to the *internal vertebral venous plexuses*, *plexus venosi vertebrales interni*" (*op. cit.*, p. 599).

³⁴¹ *Commissures of the Cord* (Figs. 1149 and 1150, p. 755).—The *commissure of the cord*, says Gowers, "consists of two parts: an *anterior* or *white* and a *posterior* or *grey commissure*" ("Diseases of the Nervous System," 2nd ed., vol. i., p. 184). A similar account is given by most English anatomists. The *posterior* or *grey commissure*, as its name implies, consists, like the *anterior* or *white commissure*, of connecting fibres, but in the case of the former there is a large amount of neuroglia amongst the fibres, and this gives the commissure a grey aspect. Toldt, as Fig. 1149 shows, divides the commissure of the cord into three parts: a *posterior commissure*, an *anterior grey commissure*, and an *anterior white commissure*. This difference depends merely on the fact that, while English anatomists describe the central canal of the spinal cord as being situated in the centre of the *posterior* or *grey commissure*, Toldt regards the fibres behind that canal as forming the *posterior commissure*, while the portion of the *grey commissure* in front of the canal he calls the *anterior grey commissure*; and in front of this, again, is situate the *anterior white commissure*.

³⁴² *Collateral Fibres of the Posterior Roots* (Fig. 1150, p. 755).—Recent researches have shown that the fibres of the posterior roots bifurcate as they enter the cord into two principal branches which ascend or descend respectively in the posterior white column or the adjacent part of the posterior grey column (*posterior horn*—see note ³³⁰ above). From these branches, as well as from the root fibre before it bifurcates, numerous *collaterals* (see note ³²¹ above) are given off in four principal directions: (1) to the anterior grey column (*anterior horn*) of the same side, (2) by the posterior commissure to the grey matter of the opposite side, (3) to the lateral grey column (*lateral horn*), (4) to the posterior grey column (*posterior horn*) of the same side, especially to the *substantia gelatinosa* of Rolando, the solitary cells, and to the posterior vesicular column

of Lockhart Clarke (the last-named are the fibres shown in Fig. 1150). Ultimately these collaterals divide frequently to form a ramification of nerve fibrils intimately associated with the nerve cells of the grey matter. The bifurcation of the posterior root fibre and the offset of the collaterals is shown diagrammatically in Fig. 1140, p. 750.

³⁴³ *Dorsal Nucleus* (Ibid.).—The *posterior vesicular column* of Lockhart Clarke was called by Stilling the *nucleus dorsalis*, and by Macalister the *visceral column*.

³⁴⁴ *Direct Lateral Cerebellar Tract* (Ibid.).—This tract, called by the author *fasciculus cerebropinalis*, is somewhat variously named by English authorities. Foster calls it simply the *cerebellar tract*; but this name is inadequate, as other tracts in the cord are connected with the cerebellum. Gowers calls it the *direct cerebellar tract*; Halliburton, the *dorsal or direct cerebellar tract*; Quain, finally, employs the precise but cumbersome name, *dorsolateral ascending cerebellar tract*. I believe, however, that Flechsig's name, *direct lateral cerebellar tract*, is that generally employed, and as it is sufficiently distinctive and at the same time fairly concise, I have adopted this name in the text.

³⁴⁵ *Septum Posticum of the Subarachnoid Space of the Spinal Cord* (Ibid.).—For an account of this structure, which is called by the author the *septum subarachnoidale*, see Quain, *op. cit.*, vol. iii., part i., p. 188.

³⁴⁶ *Anterolateral Ascending Tract* (Fig. 1151, p. 756).—The author's name for this is *fasciculus anterolateralis superficialis*, with an alternative German name of *Gowers'scher Strang*—i.e., *tract of Gowers*. Quain calls it the *ventrolateral or anterolateral ascending cerebellar tract*. Halliburton gives both the names used in the text, as alternatives to *ventral cerebellar tract*, to which latter he gives the first place. Foster calls it the *anterolateral ascending tract*. It is hardly correct to qualify it, as Quain does, as *cerebellar*, for many of the fibres of the tract terminate, not in the cerebellum, but in the corpora quadrigemina. The truly cerebellar portions of this tract may, however, as Foster suggests, be regarded as "simply a more diffuse and outlying part of the [direct lateral] cerebellar tract" (*op. cit.*, p. 895).

³⁴⁷ *Lateral and Anterior Ground Fibres of Flechsig and Lateral Limiting Layer* (Ibid.).—The *lateral* and the *anterior ground fibres* (*fasciculi lateralis et anterior proprii Flechsigi*) consist of the fibres which are subject to neither ascending nor descending degeneration as a result of experimental or accidental section of the spinal cord; this region, which in section has the form of a crescentic strip of white matter surrounding the front of the posterior horn, the lateral horn, and the anterior horn of the cord, is supposed to be made up of commissural fibres "connecting the segmental mechanisms of the same lateral half of the spinal cord with each other" (Foster). Gowers describes the hindmost portion of the *lateral ground fibres*, that which intervenes between the front of the lateral or crossed pyramidal tract and the grey matter, as the *lateral limiting layer*. This separation, however, like that between the *lateral* and the *anterior ground fibres*, is made purely for descriptive purposes, and has no physiological significance, there being no difference as regards structure or development or (as far as our present knowledge goes) function between the fibres of these areas.

³⁴⁸ *Tracts of the Posterior White Column* (Ibid.).—This column is chiefly made up of two tracts, the *tract of Goll* and the *tract of Burdach*, which are separated from one another by the posterior intermediate septum (see note ³³⁶ above). In the author's nomenclature they are known respectively as the *fasciculus gracilis* and the *fasciculus cuneatus*, the former being continued into the *funiculus gracilis*, and the latter into the *funiculus cuneatus*,

of the medulla oblongata. Quain calls them *posteromesial* and *posterolateral columns*, as alternative names to *tract of Goll* and *tract of Burdach*. They are often known in England as *column of Goll* and *column of Burdach*, but the name *tract* is to be preferred, as harmonizing with the nomenclature of the other tracts which have been differentiated in the cord by physiological research.

³⁴⁹ *Classification of the Nerve Cells of the Spinal Cord* (Fig. 1152, p. 756).—I quote from Von Langer and Toldt's "Anatomy" (7th ed., pp. 588, 589) a passage which explains the names given to the nerve cells in Fig. 1152: "We may distinguish in the spinal cord three varieties of nerve cells [ganglion cells], the differential characteristic being the destination of their nerve processes. (1) The *motor cells* of the anterior grey columns [or anterior horns—see note ³³⁹ above,] whose axis-cylinder processes [axons—see note ³²¹ above] are directly continued into motor nerve fibres, and as such constitute the anterior nerve roots. (2) The *tract cells* [*Strangzellen*], whose nerve processes pass into the white matter, in which they run for a space, giving off collaterals [see note ³²¹ above] at intervals; sooner or later they, and their collaterals also, re-enter the grey matter, and there break up into terminal arborizations (*Endbäumchen*)—[the individual fine twigs of the arborizations are called *dendrites*; see note ³²¹ above]. These cells are especially numerous in the region between the anterior and posterior horns. Those tract cells whose processes cross the median plane in the anterior or white commissure of the cord are distinguished as *commissural cells*. (3) The *intercalary cells* [*Binnenzellen*, *Schaltzellen*], which are much fewer in number than the cells belonging to the other two varieties; their nerve processes do not enter the white substance, but divide within the grey matter into very fine fibrils [dendrites]. They are most numerous in the posterior grey columns [posterior horns]." I have not been able, in the English works at my disposal, to find a classification of the nerve cells of the spinal cord based on the same consideration as that given in the above quotation; hence my rendering of the author's terms *Strangzellen*, and *Binnenzellen* or *Schaltzellen* (for which he gives no Latin equivalents), are neologisms. *Tract cells* is obviously the best rendering of the first, since *Strang* is the German equivalent of the *tract* of the spinal cord of English authors. *Binnenzellen* or *Schaltzellen* I have translated by the words *intercalary cells*, in place of using the more familiar word *intermediate*, in order to avoid confusion with the cells of the *intermediate process* of Gowers (*lateral horn*, or *intermediolateral tract*—see note ³ to p. 754). The term *Binnenzellen* is not used in Fig. 1152, but apparently the term *Golgi'sche Zelle* is used with the same significance (see note ³⁵⁰ below). In conclusion, I may remind the reader that the usual English classification of the nerve cells of the spinal cord is based, not so much on their structural peculiarities or the destination of their processes, as on their arrangement in columns. The *motor cell column*, or the *cell column of the anterior horn*, is, however, made up entirely of the *motor cells* comprising Toldt's first group; further, the other principal cell columns—viz., *Clarke's column* (see note ³⁴³ above), the *lateral cell column*, the *middle cell column*, and many of the *cells of the posterior grey column*—consist of Toldt's second group of cells, the *tract cells*; finally, the *intercalary cells* of this author would appear to be identical with those generally known in England as the *solitary cells* of the posterior horn, of which Quain writes (*op. cit.*, vol. iii., part i., p. 17): "Some of the axis-cylinder processes of these cells do not leave the grey matter, but are branched, and their ramifications lose themselves in the interlacement of fibrils which invests other cells."

³⁵⁰ *Golgi's Cells (Ibid.).—It was not at first clear to me what cells in particular the author intended to denote by this name. In spite of the fact that so much of our knowledge of the intimate structure of the nervous system is derived from Golgi's work, no structure (except the *corpuscle of Golgi* or *organ of Golgi* found as a sensory nerve terminal in tendons) has hitherto been associated with the name of this investigator, nor is the term *Golgi'sche Zelle* to be found even in Von Langer and Toldt's "Text-book of Anatomy." These authors' classification of multipolar nerve cells serves, however, to throw light on the difficulty. They write (pp. 572, 573): "There are three principal forms of multipolar nerve cells [ganglion cells]. In one kind of these—the first type of Golgi—we find among the numerous processes one always which remains unbranched or gives off only a few fine collaterals, and this process, on account of its close resemblance to an axis-cylinder, is known as the *axis-cylinder process* [or *axon*; in German *Neurit*]; after a short course it acquires a medullary sheath, and is thus transformed into a medullated nerve fibre. The other processes resemble undifferentiated protoplasm in appearance, and divide again and again until the ultimate fibrils almost cease to be visible from their extreme tenuity; they are known as *protoplasmic processes* [dendrons and dendrites]; whether they are connected with nerve fibres is a matter not yet determined. . . . In a second kind of multipolar nerve cells [ganglion cells]—the second type of Golgi—the cell has, in addition to numerous dendrons, like the first kind, one axis-cylinder [axon] only; this last, however, instead of becoming transformed into a long nerve fibre, soon breaks up into an abundant arborization [the German word is *Netz*, literally *network*, but see note ³⁵² above]; cells of this type are met with in the posterior horns of the spinal cord and in the inner or granule layer of the grey matter of the cortex of the cerebellum. Multipolar nerve cells [ganglion cells] of the third kind are distinguished by the fact that they have no dendrons, all their processes being continuous with nerve fibres; cells of this kind are met with in the ganglia of the sympathetic nervous system." If the data given here regarding the cells said to belong to the "second type of Golgi" be compared with those given in note ³⁴⁰ above regarding the *intercalary cells* (*Binnenzellen*), and are further taken in conjunction with the fact that the *Golgi's cell shown in Fig. 1152 is in the posterior horn, and is unconnected with any of the tract fibres, we are led to conclude that the latter is an alternative name used by the author for the *intercalary cells*, and, finally, that these are the same as the *solitary cells* described in the quotation from Quain at the end of note ³⁴⁰ above.

³⁵¹ (Ibid.) The word *central* in these instances denotes merely "having connexions with the cerebrum," and must on no account be confused with "centripetal." In the case of the axis-cylinder process of the cell of Clarke's column, indeed, the fibre is centripetal, for it passes upwards in the direct lateral cerebellar tract, and if severed degenerates upwards. The (red) fibres passing from the anterior and lateral pyramidal tracts to the motor cell column, however, are centrifugal fibres.

³⁵² *Reflex Collaterals* (Fig. 1155, p. 757).—I quote the following passage from Von Langer and Toldt, *op. cit.*, p. 593: "Concerning the significance of the sensory (*i.e.*, posterior) root fibres of the spinal cord, there still remains much that is obscure; but all the observations hitherto made support the view that the different connexions of the sensory collaterals represent different physiological activities of the sensory root fibres. We may mention as an especially noteworthy fact that those sensory collaterals which pass into the anterior grey columns (anterior

horns), and there invest the motor cells with terminal arborizations, would appear to be exceedingly well adapted for the direct transmission of sensory stimuli to a smaller or larger number of motor cells, and that in this manner they form the anatomical basis for the carrying out of reflex movements." These collaterals are those called *reflex collaterals* in Fig. 1155.

³⁵³ **Filum of the Spinal Dura Mater* (Fig. 1157, p. 758).—The *filum terminale*, or *central ligament of the spinal cord*, is a prolongation of the pia mater, enclosing for about half its length an enlarged continuation of the central canal of the cord, with a little grey matter near the upper end. As it perforates the dura mater, opposite the second sacral vertebra, it receives from that membrane a thin fibrous investment, which is called by the author **filum dura matris spinalis*. The term is not used by Quain or Macalister.

³⁵⁴ *Metathalamus, Epithalamus, and Hypothalamus* (Fig. 1161, p. 760).—These terms are explained in the following quotation: "In the anterior half of the lateral wall of the *thalamencephalon* [diencephalon, interbrain, second secondary vesicle] a hemispherical eminence forms on each side, the *optic thalamus*. In the posterior half of the lateral wall of the *thalamencephalon*, three superimposed regions must be distinguished. The middle of these, lying immediately behind the optic thalamus, the *metathalamus*, develops into the *corpora geniculata*; the region above this, the *epithalamus*, develops into the *pineal body* or *gland* and the *ganglion of the habenula*. The lowest and largest of these three regions unites with a small portion of the *prosencephalon* or *first secondary vesicle* to form the *hypothalamus*. This is definitely marked off from the *thalamus* and the *metathalamus* by the *sulcus hypothalamicus* (Monroi), which arches downwards and forwards from the entrance to the aqueduct of Sylvius. The ventral wall of the hypothalamus remains much thinner than the ventral wall of the posterior parts of the brain, and exhibits, in contact with the base of the skull, two acute-angled recesses separated from one another by the optic commissure; the anterior of these is the *optic recess*, and the posterior is the *recess of the infundibulum*. The former is bounded in front by the *lamina cinerea* (*lamina terminalis*, according to Toldt), which, as a constituent of the *prosencephalon*, is continuous with the wall of the hemispheres. . . . The *hypothalamus* . . . belongs partly to the *prosencephalon*, and partly to the *thalamencephalon*. Thus, the *corpora albicantia seu mamillaria* and part of the *tuber cinereum*, making up the *pars mamillaria hypothalami*, belong to the *thalamencephalon*; whilst the remaining (and greater) portion of the *tuber cinereum*, with the *infundibulum*, and the *posterior lobe of the pituitary body* or *hypophysis cerebri*, as well as the *optic commissure* and the *lamina cinerea*, making up the *pars optica hypothalami*, belong to the *prosencephalon*" (Von Langer and Toldt's "Anatomy," 7th ed., pp. 623, 624).

³⁵⁵ **Rhomencephalon* (Fig. 1163, p. 761).—This term is used by the author to denote the *medulla oblongata*, the *pons Varolii*, the *cerebellum*, and the **isthmus rhombencephali* (see note ³⁵⁰ below), the solid parts, that is to say, which environ the *fourth ventricle*, the floor of which is known in Germany as *fossa rhomboides*. (In England *fossa rhomboidalis* is an alternative name, seldom employed, for the fourth ventricle as a whole—see note ³⁵⁶ above.)

³⁵⁶ *Flexures of the Developing Brain* (Fig. 1164, p. 762).—These flexures, denoted by Quain simply as *first*, *second*, and *third cerebral flexures*, respectively, have no Latin names in the author's nomenclature. The German names are: for the *first flexure*, beneath the mid-brain, *Scheitelkrümmung*—*i.e.*, *parietal flexure*; for the *second flexure*, in the region of the pons, with the convexity directed forwards (the reverse of the first), *Brückenkrümmung*—*i.e.*, *pontine flexure*; for the third, at the junction of the medulla

oblongata with the cord, likewise with a ventralwards convexity, *Nackenkürmmung*—i.e., *cervical flexure*.

³²⁷ (Ibid.) The *fourth* and *fifth* secondary vesicles (*epencephalon* and *metencephalon*, according to Quain) are developed from the *posterior primary vesicle* or *hind-brain*. Note that *metencephalon* is used by Toldt in a different sense, signifying not the *fifth*, but the *fourth* secondary vesicle.

³²⁸ *Mid-brain* (Ibid.).—Whereas the *anterior* and *posterior primary vesicles* give rise to two *secondary vesicles* each (*first* and *second*, *fourth* and *fifth*, respectively), the *middle primary vesicle* remains undivided as the *third secondary vesicle*. From this, the *mid-brain* or *mesencephalon*, are developed the aqueduct of Sylvius, the *corpora quadrigemina*, and the *crura cerebri*.

³²⁹ *Pineal Stria* or *Stria Medullaris* (Fig. 1169, p. 763).—This white stria runs along the upper curved margin of the lateral wall of the third ventricle, from the habenula of the pineal body behind to the anterior pillar of the fornix in front, and separates the inner from the upper surface of the optic thalamus. Owing to its connexion with the fornix, the *pineal stria* is known also as the *tænia fornicis*, and this latter name, indeed, is that chiefly used by Quain to denote this structure. The name *tænia fornicis* is, however, used by Toldt in a different sense—viz., to signify the line of attachment of the inner layer of the choroid plexus of the lateral ventricle to the outer free margin of the fornix. See Fig. 1203, p. 784, and Fig. 1204, p. 785, also note ³²⁹ below.

³³⁰ *Hypothalamus* and *Sulcus Hypothalamicus* (Monroi) (Fig. 1173, p. 764).—The free internal surface of the optic thalamus, which forms the upper part of the lateral wall of the third ventricle, is bounded below by a sulcus which runs forwards from the anterior extremity of the aqueduct of Sylvius to the foramen of Monro. This is known as the *sulcus of Monro* (*sulcus hypothalamicus Monroi*), which is described neither by Quain nor by Macalister, though the latter authority depicts it in Fig. 778, p. 709, of his "Text-book of Human Anatomy." Von Langer and Toldt call this sulcus alternately *sulcus limitans ventriculi tertii*—see note ³⁷⁷ below. The parts below the sulcus, forming the floor of the third ventricle, make up together what the author calls the **hypothalamus*. The use of this term in relation to the development of the brain has been already explained in note ³³⁴ above. The parts of the adult brain which, according to the Continental terminology, combine to form the hypothalamus are: (1) The *corpora albicantia seu mamillaria*, (2) the *tuber cinereum*, (3) the *pituitary body* or *hypophysis cerebri*, (4) the *optic commissure* or *chiasma* and the *optic tracts*, (5) the *lamina cinerea*. All these structures are shown in Fig. 1173, p. 764, except the *tuber cinereum*, which is depicted in Fig. 1174, p. 765.

³³¹ *Infundibulum* et **Recessus Infundibuli* (Ibid.).—The author draws a distinction between the *infundibulum*, the funnel-shaped downwardly projecting process at the base of the brain, behind the optic commissure, to the extremity of which the pituitary body is attached, and the **recess of the infundibulum*, the cavity in the interior of that process, which is part of the third ventricle. Quain and Macalister use the term *infundibulum* indifferently to denote either the process or its cavity.

³³² *Posterior Perforated Space* and **Anterior* and **Posterior Recess* (Ibid.).—The *posterior perforated space* (*locus perforatus posticus*) lies in a deep fossa (*fossa interpeduncularis Tarini*, the *interpeduncular fossa* of Tarini) between the diverging *crura cerebri*. Yet another name for the triangular space enclosed between the *crura* at the base of the brain is that used by Schwalbe—*trigonum interpedunculare*. The posterior angle of this triangular fossa is situate in the median line at the anterior

margin of the pons Varolii; this angle is called by Toldt **recessus posterior*. The anterior extremity of the interpeduncular fossa or posterior perforated space, the **recessus anterior* of Toldt, and lies immediately behind the *corpora albicantia seu mamillaria*. The terms **anterior* and **posterior recess* are used neither by Quain nor by Macalister. The grey matter forming the floor of the space is called by Toldt *substantia perforata posterior*, and by Macalister the *posterior perforated plate*. The anterior part of this plate forms the posterior part of the floor of the third ventricle; but behind a line joining the anterior borders of the third nerves it forms the floor of the aqueduct of Sylvius.

³³³ *Pyramids* (Ibid.).—The *pyramids* of the medulla oblongata are sometimes distinguished as the *anterior pyramids*, the *funiculi graciles* with their *clavae* being by some anatomists called the *posterior pyramids*.

³³⁴ *Anterior Extremity of the Aqueduct of Sylvius* (Ibid.).—Immediately in front of the posterior commissure the aqueduct of Sylvius expands abruptly to form the third ventricle. To this expansion the author gives the name of *aditus ad aqueductum cerebri*.

³³⁵ *The Pineal Body and its Connexions* (Ibid.).—As the accounts of the connexions of the *pineal body* or *gland* (*conarium*, *epiphysis cerebri*) given by Von Langer and Toldt, Quain, and Macalister, respectively, differ considerably, and this not merely in terminology, it is necessary, in order that the denotation of the terms used in Fig. 1173, p. 764, and in some later figures, may be clearly understood, to quote from the works of these authors. According to Von Langer and Toldt (*op. cit.*, p. 630), "The *pineal body* (*corpus pineale*) . . . is developed from the *epithalamus* [see Fig. 1161, p. 760, and note ³³⁴ above] . . . it projects freely from the roof of the mid-brain, between the upper or anterior pair of *corpora quadrigemina*, and is connected with these by a thin layer of white substance, which extends forwards from the base of the pineal body, and then curves downwards to become directly continuous with the quadrigeminal lamina; this layer of white substance forms the *posterior commissure* of the third ventricle. Above this there extends forward from the base of the pineal body an extremely thin layer of grey substance, the *commissura habenularum*, which extends on either side into a thin stria, the *peduncle of the pineal body* or *habenula*; and the habenula is further attached on both sides to the back of the optic thalamus by the intermediation of a triangular expansion, the *trigonum habenulae*, and of this last the *pineal stria* (*stria medullaris thalami*) [see note ³³⁰ above] is a direct forward continuation. Between the upper grey and the lower white medullary layer proceeding forwards from the base of the pineal body is a narrow pointed backward extension of the third ventricle, the *pineal recess* (*recessus pinealis*). . . . The *velum interpositum* or *tela choroidea superior* forms the upper boundary, and the anterior half of the upper surface of the pineal body forms the lower boundary, of another pointed backward extension of the third ventricle, the *suprapineal recess* (*recessus suprapinealis*)." According to Quain (*op. cit.*, vol. iii., part i., p. 114), "the *pineal body* . . . is attached on each side by a broad but flattened stalk of white fibres (*pedunculus conarii*) which is separated by the pineal recess of the ventricle into a dorsal and a ventral portion. The ventral portion curves downwards; it belongs to the ventral portion of the posterior commissure. . . . The upper portion extends on each side along the ridge-like junction of the upper and mesial surfaces of the thalamus as the *pineal stria* or *tænia fornicis* [see note ³³⁰ above]. At the sides the stalk merges into the *trigonum habenulae*." The term *habenula* is not employed by Quain in this passage, but elsewhere (p. 111) he mentions it as

an alternative name for the *peduncle of the pineal body*. Though this author describes the peduncle as consisting of white fibres, the middle of what he calls the *dorsal portion* of the habenula is identical with the *thin grey layer* constituting the *commissura habenularum* of Von Langer and Toldt. According to Macalister (*op. cit.*, p. 720), "On the inner side of each optic thalamus is a white streak, the *crus pinealis*, outside which is a grey band, the *habenula of the pineal body*, passing from the *ganglion habenula* or *trigonum habenula*; beginning below and in front, and coursing backwards along its upper and inner angle, to end by joining with a white band, the *transverse frænulum of the pineal body*. The junction between the habenula and frænulum is dilated into a small triangular knob, the *trigonum habenula*. Below and attached to this is a transverse white band, the *posterior commissure*, in reality a foremost portion of the mid-brain." Thus, Macalister extends the significance of the term *crus pinealis* to include the *pineal stria* (*stria medullaris thalami*—see note ³⁶⁹ above). The *commissura habenularum* of Toldt is the *transverse frænulum of the pineal body* of Macalister, which the latter anatomist, in agreement with Quain, describes as a *white band*. Macalister is peculiar in identifying the *ganglion habenula* and the *trigonum habenula*, the former term having been applied by Meynert to a collection of nerve cells in the interior of the latter. With regard to the biological significance of the structures above described, Macalister remarks (*op. cit.*, *loc. cit.*): "These habenal bands are possibly the remains of the optic nerve of the rudimentary median eye coming from the front of the optic thalamus and passing backwards to the pineal body." On p. 722 he writes: "The base of the pineal body is attached by a short stalk to a transverse white band or frænulum above the posterior commissure. . . . The pineal body is a rudiment of a median parietal eye, which probably at one time in ontogeny reached the surface. It is proportionally much larger in the foetus than in the adult."

³⁶⁸ **Fastigium* (Ibid.).—This name is given by the author to the angular recess in the roof of the fourth ventricle, between the valve of Vieussens (superior medullary velum) and the inferior medullary velum. The apex of the recess is directed towards the medullary centre of the worm, and in that centre, adjacent to the fastigium on either side of the middle line, is a small collection of grey matter known as the *nucleus of the roof* or *nucleus fastigii*, one of the nuclei of the white matter of the cerebellum (see Fig. 1187, p. 772, and Fig. 1188, p. 773). Although the term *nucleus fastigii* is used both by Quain and Macalister, neither of these authorities employs the term *fastigium*. Quain speaks of it as the *tent of the fourth ventricle*.

³⁶⁷ *Gyrus Rectus* (Fig. 1174, p. 765).—This name, or its English equivalent *straight gyrus*, is sometimes given to the inner part of the *inner orbital gyrus*, between the olfactory sulcus and the mesial border of the orbital surface of the frontal lobe.

³⁶⁶ *Middle or Grey Root of the Olfactory Tract* (Ibid.).—According to Quain (*op. cit.*, vol. iii., part i., p. 159), "the *olfactory tract* . . . bifurcates posteriorly into two roots, *mesial* and *lateral*, which diverge as they pass backwards and enclose . . . a space, the *trigonum olfactorium*, which is also known as the *middle* or *grey root* of the tract." The term *stria olfactoria intermedia*, used by Toldt to denote the *middle* or *grey root of the olfactory tract*, is, however, distinguished by him from the *trigonum olfactorium* (see Fig. 1174, p. 765). "It is very short and often very ill-defined; and it passes directly backwards to the anterior perforated lamina" (Von Langer and Toldt, *op. cit.*, p. 639). The middle root, in fact, occupies the central portion of the trigonum olfactorium.

³⁶⁹ *Isthmus Rhombencephali*, etc. (Fig. 1175, p. 766).—I quote from Von Langer and Toldt's "Anatomy" (pp. 618, 619) the following passage, in order to throw light on certain differences between the author's nomenclature and that usual in England. (The significance of the term *rhombencephalon* has already been explained in note ³⁶⁵ above.) "The *isthmus rhombencephali* constitutes the uppermost, most constricted portion of the rhombencephalon, serving to connect it with the mid-brain and the cerebrum." The dorsal surface of this isthmus, consisting of the *brachia conjunctiva* (superior peduncles of the cerebellum, *crura cerebelli ad cerebrum*), with the *velum medullare anterius* (superior medullary velum, or valve of Vieussens) between them, and the *frænulum veli* which passes forwards from the velum to the *sulcus longitudinalis seu sagittalis* of the quadrigeminal lamina, are then described, and the authors proceed: "On the lateral surface of the isthmus we observe a circumscribed triangular area, which exhibits a fasciculus of fibres passing on each side from the interior of the cerebral peduncle, then bending upwards on the outer surface of the superior peduncle of the cerebellum to reach the quadrigeminal lamina. This is the *trigonum lemnisci*. The triangle is separated below from the *crus cerebri* by a well-marked furrow, the *sulcus lateralis mesencephali*; it is bounded in front by the lower (or posterior) brachium of the quadrigeminal bodies; behind it is separated from the outer margin of the superior peduncle of the cerebellum by a shallow groove passing obliquely backwards and downwards towards the pons Varolii. The fasciculus of fibres which comes to the surface in the triangle just described is known as the *fillet* or *lemniscus*. The basal surface of the *isthmus rhombencephali* consists of the parts forming the floor of the upper end of the fourth ventricle." The above fully explains the author's use of the term *isthmus rhombencephali* (Fig. 1161, p. 760, and Fig. 1162, p. 761); embryologically this corresponds to the *isthmus of His*, the constriction between the third and fourth cerebral vesicles (Quain, *op. cit.*, vol. i., part i., p. 67). The term *isthmus encephali* is used by Quain in a different sense to denote the mid-brain itself (*op. cit.*, vol. iii., part i., p. 38). As regards the *trigonum lemnisci* (*triangle of the fillet), this term is not used by Quain or Macalister, though the area in question is minutely described by the former authority. The fillet, he writes (*op. cit.*, vol. iii., part i., p. 103), "is seen on the surface as a band of obliquely curved fibres, occupying a triangular area at the side of the tegmentum, and it was to this band that the name of *fillet* was originally applied by Reil. It is now known as the *lower* or *lateral fillet*." The *sulcus lateralis mesencephali* is known in England either by that name or by its English equivalent of *lateral groove*; it indicates the outer limit of the crura of the cerebral peduncle and the line along which the substantia nigra comes to the surface on the outer side, just as the *oculomotor groove* indicates the inner limit of the crura (marking it off from the posterior perforated space) and the line along which the substantia nigra comes to the surface on the inner side.

³⁷⁰ **Tania Chorioidea* (Fig. 1176, p. 767).—This name is given by the author to the line of attachment of the *outer layer* of the choroid plexus of the lateral ventricle, here running parallel with and adjacent to the *stria terminalis* or *tania semicircularis*. See note ¹ to p. 784, and note ³⁶⁹ below.—It will be noted that in the official German nomenclature the term *chorioidea* retain a syllable that has been lost in the English equivalent *choroid*. The former spelling is etymologically more correct, the words being derived from the Greek *χόριον*, a membrane.

³⁷¹ (Ibid.) *Middle* of the upper or dorsal portion of the *pedun-*

culus conarii or *habenula* (Quain), or *transverse frantum* of the pineal body (Macalister). See note ³⁶⁸ above.

³⁷² (Ibid.) The superior or anterior pair of corpora quadrigemina or optic lobes were termed *nates* by Vesalius, the inferior or posterior pair being called *testes*, but these names are now rarely used.

³⁷³ (Ibid.) These apertures in the epithelial roof of the lateral recess of the fourth ventricle are described by Quain, who does not, however, give them any distinctive name; Macalister calls them the *foramina of Key and Retzius* or *foramina of Mierzejewsky*.

³⁷⁴ (Fig. 1177, p. 767.) "The epithelial layer of the roof of the ventricle follows all the convolutions of the choroid plexuses, but is nowhere pierced by them; it is generally described as the *epithelium of the plexuses*" (Quain, *op. cit.*, vol. iii., part i., p. 50).

³⁷⁵ *Stratum Nucleare* (Ibid.).—This term is not used by Quain or Macalister, nor even is it to be found in Von Langer and Toldt's "Anatomy." Apparently it denotes the tract of grey matter in which the nuclei of the lower cranial nerves are situated, this tract being in the situation indicated in Fig. 1177.

³⁷⁶ *Funiculus Teres* and **Facial Eminence (Eminentia Teres)* (Figs. 1178, 1179, p. 768).—On either side of the median groove in the floor of the fourth ventricle is an eminence, called by Toldt *eminentia medialis*, extending from one extremity of the ventricle to the other. In England it is variously known as the *funiculus teres*, *fasciculus teres*, and *eminentia teres*. "In the upper half of the floor of the ventricle there may be seen, on the inner side of the superior fovea, a rounded elevation of the fasciculus teres, produced by the nucleus of the sixth nerve, with the deep part of the facial arching round it" (Ellis, "Demonstrations of Anatomy," 10th ed., p. 234). "Just above the auditory striæ, the eminentia medialis widens out to form a flattened tubercle, characterized also by a somewhat lighter colour than the surrounding portion of the floor of the ventricle; owing to its relation to the root bundles of the facial nerve, this tubercle is called the **facial eminence (*colliculus facialis*)*" (Von Langer and Toldt, *op. cit.*, p. 620). Thus, while Ellis gives no name at all to the eminence under consideration, Von Langer and Toldt give one that can hardly be considered appropriate; for, though it is true that the inner genu of the facial nerve gives rise to its projection, it is not the *facial* but the *abducent nucleus* that lies beneath it, and the name of **facial eminence* is not in harmony with the names *auditory tubercle*, *trigonum hypoglossi*, etc., given to other parts of the floor of the fourth ventricle. I would suggest, therefore, that the name of *eminentia teres* should no longer be used as a synonym for the *funiculus* or *fasciculus teres*, but should be reserved to denote that part only of the latter beneath which lies the nucleus of the sixth nerve and the inner genu of the facial nerve. Thus, *eminentia teres* would be the English equivalent of the *colliculus facialis* of the Continental nomenclature. In the last edition of Quain's "Anatomy" the term is used with this significance: "Between the superior fovea and the median sulcus is the prolongation of the funiculus teres, which is prominent (*eminentia teres*) opposite the fovea, but becomes gradually less so above and below" (*op. cit.*, vol. iii., part i., pp. 50, 51).

³⁷⁷ **Limiting Sulci* (Fig. 1179, p. 768).—Concerning the limiting sulci in general, Von Langer and Toldt write as follows (*op. cit.*, pp. 602, 603): "In addition to the longitudinal segmentation of the brain by means of transverse furrows . . . we recognise in the embryonic brain also a *ventral* and *dorsal* segmentation. The boundaries between the ventral and dorsal segments consist of right and left lateral longitudinal furrows, the *sulci limitantes*, which extend through all the six principal subdivisions of the

brain, and are still clearly recognisable in the adult brain. The significance of this ventrodorsal segmentation lies in the fact that from the respective ventral and dorsal portions of the individual secondary cerebral vesicles quite distinct portions of the brain are developed; and in particular it is to be noticed that in the ventral segments the nuclei of origin of all the motor cranial nerves arise—in the dorsal segments, on the other hand, the nuclei of origin of all the sensory cranial nerves. In this fact we find an important homology between the brain and the spinal cord." As regards the **limiting sulci of the floor of the fourth ventricle* in particular (see Fig. 1179, p. 758, and Fig. 1210, p. 787), the same authors write (*op. cit.*, p. 621): "We must also mention the *sulci limitantes fossæ rhomboideæ*; these are two longitudinally disposed **limiting sulci* which separate the parts developed from the ventral portion of the embryonic **rhombencephalon* (see note ³⁶⁹ above) from the parts developed from the dorsal portion of the same. Passing upwards from the calamus scriptorius, the limiting groove lies on either side between the trigonum hypoglossi and the ala cinerea; above this the **limiting sulcus* is represented by the inferior fovea, and it proceeds thence upwards along the inner border of the trigonum acustici or auditory triangle, its course being somewhat curved, with the concavity towards the median line, to pass into the superior fovea; thence upwards it extends along the outer border of the eminentia teres as far as the aqueduct of Sylvius." The *sulcus of Monro*, *sulcus hypothalamicus Monroi* (see Fig. 1173, p. 764, and note ³⁶⁰ above), is another sulcus of this group, being given by Von Langer and Toldt the alternative name of *sulcus limitans ventriculi tertii*.

³⁷⁸ **Nucleus of the Optic Nerve* (Fig. 1180, p. 769).—This term is not used by Quain or Macalister. The author here applies it to the *grey matter of the external geniculate body*, and Von Langer and Toldt write (*op. cit.*, p. 648): "The light-perceiving fibres of the optic nerve for the most part pass into the external geniculate body, and in part also into the upper quadrigeminal body. The grey nuclei of these bodies are therefore to be regarded as the *nuclei* of the optic nerve." The appropriateness of the term must, however, be questioned, in the light of the most recent observations. Gowers writes on this point ("Diseases of the Nervous System," 2nd ed., vol. ii., p. 54): "Of these intermediate stations [between the fibres of the optic tract and the grey matter of the hemisphere], the external corpus geniculatum has been commonly regarded as that which is of chief importance in connexion with the visual fibres, since its atrophy has been frequently observed in cases of long-standing atrophy of the tract. But many recent observations establish the fact that disease limited to the posterior extremity of the optic thalamus may cause hemianopia, and it seems doubtful whether the symptom is caused by disease of the external geniculate body. Hence we must regard the pulvinar as the intermediate visual centre, and the precise function of the corpus geniculatum becomes again mysterious."

³⁷⁹ *The motor nucleus of the glossopharyngeal and pneumogastric nerves* (Fig. 1181) is otherwise known as the *nucleus ambiguus*, or *accessory* or *efferent vagoglossopharyngeal nucleus* (Fig. 1180). From this nucleus arise the fibres that make up what the author calls the *motor root* of the pneumogastric nerve, the *sensory root* arising from the *principal nucleus* of the same nerves or *nucleus of the ala cinerea*; finally, the *funiculus solitarius* supplies a *spinal root* to the pneumogastric nerve.

³⁸⁰ *Nomenclature of the Parts of the Cerebellum* (Figs. 1182, 1183, p. 770).—Quain's description of the cerebellum is so much fuller and more minute than that of Von Langer and Toldt, that it has

been impossible, in Figs. 1182 to 1189, to incorporate the whole of Quain's terminology (as I have endeavoured to do throughout this English edition of Toldt's Atlas); and in the text of these figures I have for the most part been content to give the established English renderings of the Latin names used in the original. As heretofore, however, Quain's terminology has remained the standard, though a portion only of that author's description is represented in these figures. The three principal omissions in Von Langer and Toldt's description of the cerebellum are: (a) that the fissures and sulci, with the exception of the *great horizontal fissure* and the *transverse fissure* (see note ³⁸³ below) are left unnamed; (b) that while the worm and the hemispheres respectively are divided into segments in the usual manner, the names used by Quain for the *lobes*, each consisting of a segment of the worm together with the parts of the hemispheres specially related to that segment, are not given by the German author; and (c) that the *slender lobe* (*lobus gracilis*) of the under surface of the hemispheres is entirely omitted from Toldt's description. As far as can be judged from Figs. 1183 and 1185, the *anterior part* of the *slender lobe* (*lobus gracilis anterior*) constitutes the hinder portion of the *lobus biventralis* of the author; while the *posterior part* of the *slender lobe* (*lobus gracilis posterior*) constitutes the anterior portion of the *lobus semilunaris inferior* of the author.

³⁸¹ *Quadrilateral Lobe* (Fig. 1882, p. 770).—According to Quain (*op. cit.*, vol. iii., part i., p. 74), "The combined anterior and posterior crescentic lobes of each hemisphere were formerly termed the *quadrilateral lobe*." In Ellis's "Demonstrations of Anatomy" this lobe is called the *anterior or quadrate lobe*. Macalister terms its subdivisions the *anterior* and *posterior lunated lobules*. Kölliker called them *lobus lunatus anterior et posterior*.

³⁸² *Central Lobe and Central Lobule* (Ibid.).—It would be better to use the name *central lobule* to denote the part of the worm situate between the lingula and the culmen, and to reserve the name *central lobe* for the *lobule* and its two *alae* considered as a whole. See also note ³⁸⁰ above.

³⁸³ *Transverse Fissure of the Cerebellum* (Fig. 1184, p. 771).—"The grey cortex of the cerebellum, considered as a whole, has the form of a shell, open in front, and receiving into its interior, by means of this anterior, transversely-disposed opening (**fissura transversa cerebelli*), the three pairs of cerebellar peduncles" (Von Langer and Toldt, *op. cit.*, p. 615). This so-called *transverse fissure* is, however, simply the anterior part of the *great horizontal fissure*, which, to quote Macalister (*op. cit.*, p. 727), "widens towards the pons, where it receives the crus [crura] cerebelli."

³⁸⁴ *Capsule of the Dentate Nucleus* (Fig. 1187, p. 772).—According to Quain (*op. cit.*, vol. iii., part i., p. 83), "The dentate nucleus may be described as consisting of a plicated pouch or capsule of grey substance, open at one part and enclosing white matter in its interior, like the dentate nucleus of the lower olivary body." Toldt, however, uses the word *capsule*, not to denote the corrugated grey lamella of the dentate nucleus, but in the sense explained in the following quotation (Von Langer and Toldt) *op. cit.*, p. 613: "The white medullary substance which immediately envelops the *nucleus dentatus* consists of thick medullated nerve fibres, which on all sides enter the grey lamella of the nucleus." These white fibres thus form a *capsule* for the dentate nucleus in the same sense in which the white matter adjacent to the lenticular nucleus of the corpus striatum forms the internal and the external capsule. Cf. also the fibres called by Stilling the *semicircular fibres*, which curve round the corpus dentatum in their passage from the inferior peduncle to the cortex of the cerebellar hemisphere. They are shown in a drawing after Stilling in Quain's "Anatomy," vol. iii., part i., p. 83, Fig. 60.

³⁸⁵ *Nucleus of the Olivary Body* (Figs. 1188, 1189, p. 773).—Toldt calls this *nucleus olivaris inferior*, and in England also it is sometimes distinguished as the *inferior olivary nucleus*. Most frequently, however, it is spoken of as the *olivary nucleus* without qualification, the *accessory olivary nuclei* (Fig. 1239, p. 786) and the *superior olivary nucleus* (Fig. 1211, p. 787) being always carefully distinguished by the use of the qualifying adjective. The nucleus of the lower olive is also known as the *corpus dentatum of the olive*.

³⁸⁶ *Sulci and Gyri of the Outer or Convex Surface of the Occipital Lobe* (Fig. 1192, p. 776).—These are more variable than those of the other lobes, and the matter is further complicated by divergencies in nomenclature, and by a want of agreement as to the anterior boundary of the occipital lobe on the outer or convex surface of the hemisphere. According to Von Langer and Toldt, "this boundary is constituted by a very variable vertically disposed furrow, the *sulcus occipitalis anterior*." This sulcus is not described by Quain, but, as far as can be judged from Fig. 1192 of Toldt's Atlas, it must be regarded as an aberrant, detached, and unusually profound portion of the *anterior occipital sulcus* of Quain, which Toldt (following Ecker) calls the *transverse occipital sulcus*. As regards the *gyri* of the occipital lobe, the old description of three *occipital gyri*—*superior*, *middle*, and *inferior*—has for the most part been abandoned. Toldt describes *superior occipital gyri*, above the *transverse occipital sulcus*, continuous with the *cuneus* of the mesial surface; and *lateral occipital gyri*, below that sulcus, "uniting posteriorly to form the *occipital pole* of the hemisphere" (see Fig. 1194, p. 777). Quain divides the outer surface of the occipital lobe into an *anterior occipital gyrus*, "between the anterior occipital sulcus (transverse occipital sulcus of Toldt) and the upturned end of the lateral occipital sulcus," and a *posterior occipital gyrus* "behind the upturned end of the lateral occipital sulcus." Owing to these manifold discrepancies, I have in the text been content to give a literal English translation of the Latin names used by Toldt to denote the sulci and gyri of the outer surface of the occipital lobe.

³⁸⁷ *Rostral Lamina* (Fig. 1193, p. 776).—"The *lamina rostralis* is a lamella of the thickness of a sheet of notepaper, directly continuous with the rostrum of the corpus callosum, which curves downwards, concave anteriorly, to the anterior commissure, envelops that structure, and below it is continued as the *lamina cinerea*; on either side the rostral lamina is directly continuous with the subcallosal gyri or peduncles of the corpus callosum, thus appearing to constitute a commissural layer between the latter" (Von Langer and Toldt, *op. cit.*, p. 641). "The *rostrum* of the corpus callosum becomes gradually narrower as it descends, and is connected with the *lamina cinerea* by a thin white layer, the *commissura basos alba* of Henle" (Quain, *op. cit.*, vol. iii., part i., p. 128).

³⁸⁸ *First or Superior Frontal Gyrus, Marginal Gyrus, and Paracentral or Oval Lobule* (Figs. 1194, 1195, p. 777).—The *first or superior frontal gyrus* consists of two portions—an *outer*, smaller, on the outer or convex surface, and an *inner*, larger, on the inner or mesial surface of the frontal lobe; these are continuous over the upper mesial border of the hemisphere. The *outer* part is bounded above by the border just named, and below by the superior frontal sulcus; to this part alone the name of *first frontal convolution* is in England often restricted. The *inner* part, commonly known in England as the *marginal gyrus*, is bounded above by the upper mesial border of the hemisphere, and below and behind by the callosomarginal fissure. The marginal gyrus, again, is divided into two portions by the *anterior ascending ramus of the paracentral fissure*. The anterior and much larger portion

is that denoted by the author in Fig. 1195 as the *gyrus frontalis superior*. The posterior extremity of the marginal gyrus, separated from the rest by the above-mentioned sulcus, is known as the *paracentral* or *oval lobule*. This lobule is continuous with the two central gyri on either side of the upper extremity of the fissure of Rolando.

³⁸⁹ **Triangular Recess (of the Third Ventricle)* (Fig. 1200, p. 782).—This name is not used by Quain or Macalister. Von Langer and Toldt describe the recess in the following terms (*op. cit.*, pp. 632, 633): "Above the lamina cinerea, the anterior pillars of the fornix (columnæ fornicis) constitute the anterior wall of the third ventricle. Since these pillars converge as they ascend, there exists between them a triangular fossa, the **recessus triangularis*, which is closed in front by the attachment of the septum lucidum to the front of the anterior pillars of the fornix. At the base of the **triangular recess* we see the middle of the anterior commissure." (The **triangular recess* is well shown in Fig. 1220, p. 792, and in Fig. 1224, p. 795.)

³⁹⁰ *Gyrus Fornicatus and Sulcus Cinguli* (Fig. 1201, p. 783).—The terms *gyrus fornicatus*, *gyrus cinguli*, and *callosal gyrus* are used by Quain as synonymous, to denote the convolution marked *gyrus cinguli* in Fig. 1201, p. 783. Toldt, however, employs the term *gyrus fornicatus* in a more extended sense, as a general name for the *gyrus cinguli* and *gyrus hippocampi* considered as a whole (the *grand lobe limbique* of Broca). The *gyrus cinguli* is bounded above by the *sulcus cinguli*, the *callosomarginal fissure* of English authors (see Fig. 1195, p. 777); and this is divided by Toldt into a *pars marginalis* and a *pars subfrontalis*, *marginal* and *subfrontal* portions, the terms being self-explanatory. The posterior portion of this sulcus was called by Wilder the *paracentral fissure*; the anterior portion, which is parallel with the genu of the corpus callosum, the *prelimbic fissure*.

³⁹¹ **Free Portion and *Covered Portion of the Anterior Pillar of the Fornix* (Ibid.).—"The anterior pillars of the fornix, or columnæ fornicis, are rooted below in the corpora albicantia seu mamillaria, from which they pass obliquely upwards, forwards, and inwards through the grey matter of the **hypothalamus* [see note ³⁸⁴ above], emerging therefrom in front of the anterior extremity of the optic thalamus. We thus distinguish two portions in each anterior pillar of the fornix, viz.: an inferior portion, the **pars tecta columnæ fornicis*, which is hidden in the substance of the lateral wall of the third ventricle; and a superior portion, the **pars libera columnæ fornicis*, which ascends free in front of the optic thalamus" (Von Langer and Toldt, *op. cit.*, pp. 642, 643). Between the free portions of the two pillars is situate the **triangular recess* (see note ³⁸⁹ above); and they form the anterior boundary of the foramen of Monro, which is situate between the columnæ fornicis and the anterior extremities of the optic thalami.

³⁹² *The Use of the Term "Tenia"* (Figs. 1202, 1203, p. 784).—Von Langer and Toldt use the term *tenia* in a more precise and restricted sense than that in which it is used by Quain, and it seems expedient to give a brief account of the significance attached to this term by these respective authorities in all cases in which they use it in describing the anatomy of the brain. One instance, in which Quain and Toldt use the term in exactly the same sense, may be first dismissed; this is to denote the *tenia ventriculi quarti*, the *tenia (of the fourth ventricle)*, often, however, called the *lingula* by English anatomists—see Fig. 1177, p. 767, Fig. 1178, p. 768, and Fig. 1188, p. 773 (Macalister denotes the lower part of the *tenia* or *lingula* by the name *ponticulus*, a name applied by Quain to a quite different structure, viz., a band of arched fibres often seen crossing the upper end of the

pyramid of the medulla oblongata). The other *tenia* described by Toldt—*tenia chorioidea*, *tenia fimbria*, *tenia fornicis*, and *tenia thalami*, all classed together as *tenia telarum*—are the lines of attachment of the velum interpositum and its associated choroid plexuses, along which lines the *lamina chorioidea epithelialis*, i.e., the epithelial coat of these structures, becomes continuous with the epithelial covering of the ependyma of the ventricles. Thus, the *tenia thalami* is the line of attachment on either side of the lower surface of the velum interpositum, this line extending forwards from the pineal body and its peduncle along the *stria medullaris thalami* (*pineal stria* of English authors, also known in England as the *tenia fornicis*—see below, and note ³⁸⁹ above) to the foramen of Monro, where the *tenia thalami* passes into the *tenia chorioidea*. From the foramen of Monro, the *inner layer* of the attachment of the choroid plexus of the lateral ventricle passes (1) along the outer free margin of the fornix, where it forms the *tenia fornicis*, and is continued (2) as the *tenia fimbria* along the outer margin of the *fimbria hippocampi* (see below) to the end of the inferior or descending horn of the lateral ventricle, where this layer also becomes continuous with the *tenia chorioidea*. This last, the *outer layer* of the attachment of the choroid plexus of the lateral ventricle, "runs along the border of a thin layer which proceeds from the tail of the caudate nucleus as a portion of the wall of the vesicle of the cerebral hemisphere in which no medulla has formed, and is attached to the optic thalamus along the upper surface of the *vena terminalis* (vein of the corpus striatum), hence called the *lamina affixa* [see below]. At the foramen of Monro, as already remarked, the *tenia chorioidea* is continuous with the *tenia thalami*" (*op. cit.*, p. 644). It will be seen that Toldt's use of the term *tenia* has the great merit of consistency.—As regards the *tenia* of English authors: (1) the *tenia fornicis*, as already explained, is a synonym for the *pineal stria*, called by Toldt *stria medullaris thalami*, and is the line of attachment of the choroid plexus of the third ventricle (called by Toldt *tenia thalami*); (2) the *tenia hippocampi* or *fimbria* (*fimbria hippocampi* of Toldt) is the downward prolongation in the inferior or descending horn of the lateral ventricle of the posterior pillar of the fornix, and is itself prolonged anteriorly into the white matter of the uncus (this structure is called by Macalister the *corpus fimbriatum*; its inner margin appears on the surface of the limbic lobe, above the dentate convolution or fascia dentata Tarini, from which it is separated by the fimbriodentate sulcus—see Fig. 1201, p. 783): to the ventricular margin of the fimbria the choroid plexus of the lateral ventricle is attached by means of (3) the *tenia fimbria*, a term used by Quain (*op. cit.*, vol. iii., part i., p. 158) in the same sense as that in which it is used by Toldt; (4) the *tenia semicircularis*, called by Toldt *stria terminalis*, a name very commonly used also by English anatomists, is the white stria separating the dorsal surface of the optic thalamus from the caudate nucleus of the corpus striatum: it is adjacent to the line of attachment of part of the *tenia chorioidea* of Toldt, and along it runs the *vein of the corpus striatum* (*vena terminalis* of Toldt): "Close to the ependyma and lying over this vein of the corpus striatum is a small greyish band, containing longitudinally running nerve fibres: this has been called the *lamina cornea*" (Quain, *op. cit.*, vol. iii., part i., p. 122)—the *lamina cornea* of Quain is the *lamina affixa* of Toldt; (5) the *tenia pontis* (*fila lateralia pontis* of Toldt) is figured on p. 766, and described in note ² on that page; (6) finally, the name of *tenia tecta* (*stria oblecta*, Macalister) is sometimes given to the grey or lateral longitudinal stria on the upper or dorsal surface of the corpus callosum—(see Fig. 1198, p. 780). The *tenia*

tellarum of the author are shown in the figures on p. 784 and p. 785.

³⁰³ *External or Superficial Arched or Arcuate Fibres* (Fig. 1208, p. 786).—These are divided by Von Langer and Toldt into two groups—*anterior* and *posterior*. The former group consist of the fibres usually spoken of in England as the *outer* or *superficial arched fibres* without further qualification, which emerge from the anterior median fissure, and pass backwards over the pyramid and olive to join the restiform body. According to Quain, they decussate in the raphe of the medulla oblongata, "but their further course is not certainly known." Von Langer and Toldt state that they arise from the nuclei of the funiculus gracilis and the funiculus cuneatus. "The *posterior external arched fibres* pass directly from the nuclei of the funiculus gracilis and the funiculus cuneatus to the surface of the restiform body of the same side" (*op. cit.*, p. 614). These *posterior* arched fibres are not mentioned by Quain.

³⁰⁴ *Decussation of the Fillet* (Figs. 1208, 1209, p. 786).—This decussation has received very various names. "Rather unfortunately," as Gowers says, it has been called the *superior pyramidal decussation*; less objectionable is the shorter name, *superior decussation*; but this is not sufficiently distinctive. Macalister calls it the *sensory pyramid crossing*, in which the misleading analogy with the pyramids is once more alluded to. The name *sensory decussation*, also, is in common use. But the name used in the text, *decussation of the fillet*, the English equivalent of the Continental *decussatio lemniscorum*, is greatly to be preferred.

³⁰⁵ *Cerebello-olivary Fibres* (Fig. 1210, p. 787).—At the end of their description of the medulla oblongata, Von Langer and Toldt describe the above-named fibres in the following terms (*op. cit.*, p. 614): "Finally, we must mention a tract of fibres of considerable size, which does not appear on the surface of the medulla, but forms an important constituent of the restiform bodies. This tract takes origin in the nerve cells of the inferior olivary nucleus, traverses the white centre of that nucleus, and emerges at its hilum; it then crosses the median plane, and enters the opposite olivary nucleus. After passing through this latter, it passes upwards and backwards into the restiform body, and thus to the cerebellum. The tract in question is known as the *fibra cerebello-olivares*." This name is not used by Quain, but the fibres are described by that author in his account of the *nucleus of the olivary body*. "The open part of the hilum of this nucleus," he writes (*op. cit.*, vol. iii., part i., p. 56), "looks towards the middle line and receives a considerable tract of white fibres, which emanate from the raphe, being derived to all appearance from the opposite olive, and pass into the hilum along its whole extent, forming the so-called *olivary peduncle*. The fibres of the olivary peduncle are partly lost in the grey matter of the olivary nucleus, but mostly pass in small bundles through the lamina, those which are more posterior turning backwards and coursing obliquely through the posterior part of the lateral area to join the restiform body and thus to pass to the cerebellum as internal arched fibres. Others after coursing through the grey lamina . . . reach the surface . . . and are continued as part of the layer of external arched fibres into the restiform body. Through the restiform body, the arched fibres, and the fibres of the olivary peduncles, the cerebellar hemisphere of one side is connected, therefore, with the olivary nuclei of both sides. But the connection with the opposite side is the more intimate."

³⁰⁶ *Pyramidal Nucleus* (Fig. 1210, p. 787).—"In the region of the pyramids, small deposits of grey matter are also met with,

the *pyramidal nuclei*, *nuclei pyramidis*, the number and location of which is not constant; most frequently they are met with toward the posterior part of the pyramid, near the olivary nucleus" (Von Langer and Toldt, *op. cit.*, p. 613). It must be noticed that the *pyramidal nucleus* depicted in Fig. 1210 is a distinct grey nucleus from the *internal accessory olivary nucleus* shown in Figs. 1208, 1209, which latter is sometimes called the *pyramidal nucleus* by English authors.

³⁰⁷ *Crustal Bundle of the Fillet* (Figs. 1212, 1213, p. 788).—It is to be regretted that neither Toldt nor Quain gives any distinctive name to this fasciculus. The latter authority describes it in the following terms (*op. cit.*, vol. iii., part i., p. 103): "The fibres of the mesial fillet nearest to the middle line separate themselves from the rest, and pass at the lower part of the mesencephalon into the crusta, where they form a mesial bundle (Wernicke), which is traceable up into the subthalamic region, where it joins the ansa lenticularis." This bundle contains, according to Spitzka, the afferent cerebral tracts of the cranial nerves (*op. cit.*, p. 101). Gowers describes this fasciculus still more briefly: "One small bundle of fibres in the inner part of the crusta differs from the rest. As it descends it passes backwards into the tegmentum and joins the fillet. Its further relations have not been traced" ("Diseases of the Nervous System," 2nd ed., 1893, vol. ii., p. 32). I would suggest the adoption of the name *crustal bundle of the fillet* (see Figs. 1212, 1213, and 1225).

³⁰⁸ *Nucleus of the Lateral Fillet* (Fig. 1213, p. 788).—The name *nucleus lemnisci lateralis* occurs in two different figures of this work, viz., in the section of the mid-brain depicted in Fig. 1213, p. 788, and in the diagram of the tract of the fillet in Fig. 1225, p. 796. In Von Langer and Toldt's "Anatomy" (p. 657), the connexions of the *lemniscus lateralis* (*acusticus*)—the *lower* or *lateral fillet*—are thus described: "It arises for the most part from the trapezium, but in addition from the *nucleus of the fillet* [*Schleifenkern*—no Latin equivalent is given] situate posterior to the external or *dorsal accessory olivary nucleus*, and further is reinforced by fibres from the auditory striæ of the auditory triangle of the opposite side. The indirect continuation of this tract passes through the lower brachium of the quadrigeminal bodies to the internal corpus geniculatum, and thence to the cortex of the temporal lobe (*central tract of the auditory nerve*)." The *nucleus lemnisci lateralis* shown in Fig. 1213 is altogether too remote from the accessory olivary nuclei for its identification with the *nucleus of the fillet* described in the above quotation. In Fig. 1225, on the other hand, the *nucleus lemniscus lateralis* is figured more than half an inch below the inferior quadrigeminal body, beneath which it appears in the section depicted in Fig. 1213; and yet it is still a considerable way above the level of the accessory olivary nuclei. The connexions of the lower end of the lateral fillet, as shown in Fig. 1225, with the trapezium, the auditory striæ (through the upper olivary nucleus), and with the "nucleus lemnisci lateralis," lead us in this case, however, to identify the latter with the *nucleus of the fillet* mentioned in the quotation from Von Langer and Toldt's "Anatomy." The fact that Fig. 1225 is diagrammatic will not suffice to account for the discrepancy between Figs. 1213 and 1225, and it seems probable that the *nucleus lemnisci lateralis* of the former figure is an *upper* nucleus of the lateral fillet, an outlying portion of the nucleus of the lower quadrigeminal body; while the *nucleus lemnisci lateralis* of Fig. 1225 is a *lower* nucleus of the lateral fillet, viz., the medullary nucleus before mentioned adjacent to the external accessory olivary nucleus. Quain (*op. cit.*, vol. iii., part i., p. 104) states that according to Edinger some of the fibres of the fillet

"have a cell-station in a special group of nerve cells (upper nucleus of the fillet) at the level of the inferior corpora quadrigemina." Gowers, again (*op. cit.*, vol. ii., p. 36), writing of the different sets of fibres of the fillet, says: "Some fibres go to the posterior corpus quadrigeminum. . . . Others end in a collection of grey matter lying outside the junction of the two corpora quadrigemina, the *nucleus lemnisci* of Flechsig and Bechterew." The identification of Edinger's *upper nucleus of the fillet* with Flechsig and Bechterew's *nucleus lemnisci*, and the identification of both with the *nucleus lemnisci lateralis* of Fig. 1213 in Toldt's Atlas seems plausible; but the descriptions of Quain and of Gowers are too brief to allow of any certainty in the matter.

³⁹⁹ *Tegmental Decussation* (Fig. 1214, p. 789).—This term (*decussatio tegmentorum* in the author's nomenclature) is by some writers on anatomy used to denote the decussation of *all* fibres that cross the median plane within the boundaries of the tegmentum. In this work, however, the *decussation of the brachia conjunctiva or superior peduncles of the cerebellum* (*decussatio brachii conjunctivi* in the author's nomenclature—see Fig. 1172, p. 764, Fig. 1187, p. 772, Fig. 1213, p. 788, and Fig. 1226, p. 797) is not included in the *tegmental decussation*, the latter term denoting the decussation of those tegmental fibres only which do not belong to the superior peduncles of the cerebellum.

⁴⁰⁰ *Strata of the Upper or Anterior Quadrigeminal Bodies* (Fig. 1214, p. 789).—According to Quain's account of the structure of these bodies (*op. cit.*, vol. iii., part i., pp. 106, 107): "Most externally or uppermost is a thin layer of superficial neuroglia, containing no nerve cells or fibres. . . . Excluding this neuroglia layer, and also the central grey matter around the Sylvian aqueduct [*stratum griseum centrale* in Toldt's nomenclature], Tartuferi distinguishes four strata in vertical sections." These strata are: (1) *Stratum zonale*: superficial white layer. (2) *Stratum cinereum*: grey cap. (3) *Stratum albo-cinereum superius*: upper grey-white layer; or *stratum opticum*. (4) *Stratum albo-cinereum inferius*: deep grey-white layer; or *stratum lemnisci*. Von Langer and Toldt, on the other hand (*op. cit.*, p. 628), describe three layers only in this region: (1) *Stratum zonale*; (2) *stratum griseum colliculi superioris*; and (3) *stratum album profundum*. The *first* is certainly identical with the *stratum zonale* of Quain. The *third*, described as "a white lamella forming the lower boundary of the quadrigeminal layer," is shown by Fig. 1214 to be identical with the *stratum lemnisci* of Quain. The *second* would appear to comprise Quain's second and third layers—the *stratum cinereum* and the *stratum opticum*. The latter is the layer of fibres seen in Fig. 1214 arching outwards towards the inferior or posterior brachium. These fibres do not, however, pass into this brachium, but into the superior or anterior brachium, being continued through this body into the optic tract. Lines indicating the *optic layer* and the *layer of the fillet* have in this edition been added to Fig. 1214.

⁴⁰¹ *Radiation of the Corpus Striatum* (Fig. 1216, p. 790).—This term is not used by Quain. Von Langer and Toldt write (*op. cit.*, p. 655): "It must be mentioned as a fact of great importance, that the outer zone of the lenticular nucleus, as well as the corpus striatum [*i.e.*, the caudate nucleus—see note ¹ to p. 766], must be regarded as functionally representing a portion of the cortex cerebri, not only in respect of its mode of origin, but also because the nerve fibres entering this nucleus terminate in its nerve cells. But if, nevertheless, from both these basal ganglia, radiating nerve fibres pass to the cortex of the frontal and parietal lobes, forming the *radiatio corporis striati*, these fibres may with great probability be regarded as *association fibres*, homologous

with those known to connect different regions of the cerebral cortex." In Ellis's "Demonstrations of Anatomy," 10th ed., p. 227, the fibres of the corona radiata are said to be of two kinds, viz., "those extending without interruption from the cortex to the isthmus cerebri, and those uniting the cortex with the corpus striatum and optic thalamus." The fibres of the corona radiata that unite the cortex with the corpus striatum constitute the **radiation of the corpus striatum* of Toldt. Gowers, on the other hand, writes ("Diseases of the Nervous System," 2nd ed., vol. ii., p. 41): "It is doubtful whether the corpus striatum has any connexion with the cortex, and the old hypothesis that its cells interrupt the fibres which conduct motor impulses seems to be altogether wrong. Meynert thought that many fibres pass from the caudate nucleus to the cortex; but the researches of Wernicke and others make this connexion very doubtful." It is, of course, the views of Meynert that are embodied in the above quotation from Von Langer and Toldt.

⁴⁰² *Subthalamic Tegmental Region* (Fig. 1219, p. 792).—This, the forward prolongation of the tegmentum beneath the posterior part of the optic thalamus, is the *stratum intermedium* of the Continental nomenclature, forming the principal portion of the *pars mamillaris hypothalami* of the same nomenclature (see Appendix, note ³⁹⁴). The German vernacular name for this part of the brain is *Zwischenschicht*, which corresponds roughly with the English *transitional region*, an alternative name for the somewhat cumbersome term *subthalamic tegmental region*. (It must be noted that Quain uses the term *stratum intermedium* in an entirely different sense, viz., to denote the deepest fibres of the crusta, those immediately adjacent to the substantia nigra.) The subthalamic tegmental region was divided by Forel into three layers. The *uppermost*, *stratum dorsale*, "consists chiefly of fine longitudinal fibres, prolonged from the posterior longitudinal bundle according to Meynert, or from the fibres enclosing the tegmental nucleus according to Forel, possibly from both sources. The red nucleus of the tegmentum is prolonged into its posterior part, and from this a considerable number of fibres stream into the internal medullary lamina of the thalamus, and a well-marked bundle passes across the internal capsule to the lenticular nucleus" (Quain, *op. cit.*, vol. iii., part i., p. 114). The name *stratum dorsale* is not used by Toldt, but the bundle of fibres last mentioned is shown in Fig. 1219, p. 792, as the **fasciculus from the tegmental tract to the lenticular nucleus* ("Haubenbündel zum Linsenkern"). The *lowermost* layer of the subthalamic tegmental region is formed by the *corpus subthalamicum*, or *nucleus of Luys* (*nucleus hypothalamicus*, vel *corpus Luysi*, according to Toldt—see Fig. 1219, p. 792). This "has here taken the place of the substantia nigra, lying next to the prolongation of the crusta, the fibres of which are seen at the side of the subthalamic tegmental region forming the internal capsule" (Quain, *op. cit.*, loc. cit.). The *middle* layer of this region, known as the *zona incerta*, "is a reticular formation prolonged from that of the tegmentum; it passes anteriorly into the substantia interansalis" (*op. cit.*, loc. cit.). This layer is ignored by Toldt.

⁴⁰³ **Grey Portion of the Hypothalamus* (Fig. 1220, p. 792).—There is no allusion to the **pars grisea hypothalami* in Von Langer and Toldt's "Anatomy," nor does Quain give any distinctive name to this portion of the brain. The latter author, however, alludes to it in the following terms (*op. cit.*, vol. iii., part i., p. 112): "The lower surface of the thalamus is continuous posteriorly with the prolongation of the tegmentum (*subthalamic tegmental region*), but in front this prolongation inclines to the outer side, and becomes lost in a layer of grey matter which is continuous internally with the grey matter of

the floor of the ventricle, and is seen at the base of the brain as the anterior perforated lamina." These connexions are well shown in Fig. 1220. Regarding the hypothalamus in general see Appendix, note ³⁶⁴, and regarding the subthalamic tegmental region see note ⁴⁰² above.

⁴⁰⁴ *Nomenclature of the Parts of the Internal Capsule* (Fig. 1223, p. 794).—"In horizontal sections the internal capsule shows a bend (*genu*) opposite the stria terminalis, the anterior third forming an angle of about 120° with the posterior two-thirds; these two parts are known as the *anterior* and *posterior segments* respectively" (Quain, *op. cit.*, vol. iii., part i., p. 136). In the official German nomenclature, the anterior segment is the *pars frontalis capsula internæ*; the posterior, *pars occipitalis capsula internæ*. In the German vernacular these are *vorderer Schenkel* and *hinterer Schenkel* respectively; and in England they are more often denoted by the equivalent terms *anterior limb* and *posterior limb*, respectively, than by the name *segment* used by Quain. As regards the *genu capsula internæ*, Gowers remarks (*op. cit.*, vol. ii., p. 27): "The angle at which the limbs of the capsule join is called its *elbow* or *knee*. . . . Such a bend (as in a pipe) is termed a 'knee' in Germany, an 'elbow' in this country. It is perhaps better to term the junction the *angle* of the capsule." The three parts of the capsule are seen as above described in Fig. 1223, p. 794.

⁴⁰⁵ *Tegmental Region and Tegmental Tract* (Fig. 1225, p. 796).—That the diagrammatic representation of the fibres of the tegmental system given in Figs. 1225 and 1226 may be more readily understood, I condense an account of this system from Von Langer and Toldt's "Anatomy," 10th ed., pp. 663-665. Those desiring a more detailed account both of the tegmental system and the pedal system (pyramidal tract, etc.) should refer to Foster's "Physiology," 6th ed., pp. 984-994: The *tegmental tract* (*Haubenbahn*) is thus named because its fibres traverse the tegmentum of the cerebral peduncle. Its component parts have, however, a far wider range than this, comprising what is known as the *tegmental region* (*Haubengegend*). This region includes: (1) The parts bordering the calamus scriptorius (lower limit of the region); (2) the dorsal segment of the medulla oblongata; (3) the dorsal segment of the pons; (4) the tegmentum of the cerebral peduncle; (5) that part of the interbrain known as the subthalamic tegmental region (*stratum intermedium* of Toldt—see note ⁴⁰² above—upper or anterior limit of the tegmental region); [we must add (6) what Gowers calls the *tegmental radiation*—i.e., the uppermost fibres of the sensory path as they radiate to the cortex from the hindmost third of the posterior limb of the internal capsule]. The most important structures forming the tegmental tract are: The nuclei of the slender and cuneate columns, the fillet, the formatio reticularis, the red nucleus, the nucleus of Luys, and the ansa lenticularis; but, since a portion of the tegmental tract traverses the cerebellum, we must include the restiform body, the dentate nucleus, and the superior peduncle of the cerebellum. The tegmental tract consists of two portions—a ventral and a dorsal. The *ventral portion* consists chiefly of the *tract of the fillet*, connected below with the nuclei of the slender and cuneate columns, passing above in part to the tegmental radiation already mentioned, in part to the corpora quadrigemina, the optic thalamus, and the globus pallidus; it also includes the *tegmental fasciculi of the posterior commissure*, which, after crossing in this commissure to the opposite side of the brain, join the mesial nucleus of the optic thalamus. The *dorsal portion* consists of fibres which arise in the nuclei of the slender and cuneate columns, pass as arched fibres to the restiform body, thence to the nucleus dentatus of the cerebellum,

and onwards from there into the superior peduncle of the cerebellum; with this peduncle the fibres of the tract decussate, pass through the red nucleus, and thence through the subthalamic tegmental region to their destination; a few of these fibres also pass into the internal capsule, but for the most part they terminate in the corpora quadrigemina, the optic thalamus, and the globus pallidus. See also note ⁴⁰⁶ below.

⁴⁰⁶ *Classification of the Fibres of the Cerebral Hemispheres* (Ibid.).—The fibres of the medullary centres of the hemispheres may be arranged in three principal groups. A. *Projection fibres* (*Leitungssystem*), which pass from the isthmus encephali to the hemispheres or *vice versa*; the most important divisions of these are: (1) the *pedal system* with the *pyramidal tract* (Fig. 1229), and (2) the *tegmental system* with the *tegmental tract* (Figs. 1225 and 1226; also see note ⁴⁰⁵ above). B. *Transverse or commissural fibres* (*Commissurensystem*), which connect the cortex of the two hemispheres; these comprise: (1) the *anterior commissure* (Fig. 1230, and note ⁴⁰⁸ below), the principal cerebral commissure in all vertebrates below mammals, and (2) the *corpus callosum* or *great commissure* (Fig. 1230), which appears first in the lower mammals, and is enlarged proportionately with the development of the mantle (see note ⁶ to p. 760). C. *Association fibres* (*Associationsystem*), which connect different parts of the cortex of the same hemisphere; these are: (1) *short association fibres* (*fibra propria*, Meynert; *lamina arcuata gyrorum*, Arnold; *fibra arcuata cerebri*, Toldt—see Fig. 1231), which connect adjacent gyri, and (2) *long association fibres* (Fig. 1231), which connect more widely separated portions of the grey matter of the hemispheres. These latter fibres are mostly collected into definite bundles, the principal being the following: (a) The *superior association bundle* (*superior longitudinal fasciculus* or *bundle*; *fasciculus longitudinalis superior*, Toldt; *fasciculus arcuatus*, Burdach), sagittal fibres, passing from the frontal to the occipital and temporal lobes; (b) the *inferior association bundle* (*inferior longitudinal fasciculus* or *bundle*; *fasciculus longitudinalis inferior*, Toldt; *temporo-occipital bundle*), running along the outer wall of the posterior and descending horns of the lateral ventricle, and connecting the occipital and temporal lobes; (c) the *anterior association bundle* or *uncinate fasciculus* (*fasciculus uncinate*, Toldt), which curves round the bottom of the Sylvian fissure near the limen insulae, and serves to connect the third frontal gyrus with the temporal lobe and the anterior part of the limbic lobe; (d) the *cingulum* (also known as the *fillet of the corpus callosum* and as the *covered band of Reil*), the principal association bundle of the gyrus fornicatus: its fibres terminate in the cortex of the outer surface of the hemisphere, which they connect with the hippocampal and callosal gyri (Beever); (e) the *perpendicular fasciculus* (Wernicke—not mentioned by Toldt), which connects the inferior parietal lobule with the fusiform lobule; (f) the *fornix*, which connects the hippocampal region of the limbic lobe with the corpus albicans, and is commonly stated to be continued to the thalamus as the bundle of Vicq d'Azyr. The connexion between the fibres of the fornix and the bundle of Vicq d'Azyr is, however, denied by Gudden and Forel.

⁴⁰⁷ *Nucleus of the Third Nerve* (Fig. 1228, p. 799).—Quain divides the nucleus of the third nerve into parts in a manner considerably more elaborate than that shown by Toldt in Fig. 1228. I have, therefore, not attempted to harmonize the nomenclature of these two authors, but have merely given a literal translation of the terms used by Toldt.

⁴⁰⁸ *Parts of the Anterior Commissure* (Fig. 1230, p. 801).—By Von Langer and Toldt these are called simply *anterior* and *posterior* portions respectively. Quain, however, writes (*op. cit.*,

vol. iii., part i., p. 164): "The fibres of the anterior commissure which pass into the temporal lobe form by far the greater part of the commissure in man, and constitute what has been termed by Ganser the *pars temporalis*. Besides these fibres, there are others which are derived from the lobus olfactorius, and which appear to connect the olfactory tract of one side with the hippocampal gyrus of the opposite side. These form the *pars olfactoria* of Ganser; this part is very slightly developed in man." See also note ⁴⁰⁶ above.

⁴⁰⁶ *Reservoirs of Subarachnoid Fluid* (Fig. 1232, p. 802).—Quain uses Latin names for these, and gives no complete list of English equivalents; the English names in the text are, therefore, for the most part supplied by the translator. Quain enumerates the *cisternæ arachnoideales* as follows: Cisterna cerebellomedullaris (directly continuous with the subarachnoid space of the spinal cord), cisterna pontis media *seu* basilaris and cisternæ pontis laterales, cisterna interpeduncularis, cisternæ peripedunculares, cisterna chiasmatis (behind the optic chiasma), cisterna laminæ cinereæ (in front of the chiasma), cisternæ fossæ Sylvii, and cisterna corporis callosi. Of these, the cisterna cerebellomedullaris, the cisterna interpeduncularis, and the cisterna chiasmatis are identical with those given the same name by Toldt; the cisterna pontis media *seu* basilaris of Quain is identical with the cisterna pontis of Toldt, while the cisternæ pontis laterales of Quain are not depicted by the German author, nor is the cisterna peripeduncularis visible in Fig. 1232, which represents a median sagittal section; the cisterna laminæ cinereæ of Quain is merged in the cisterna fissuræ cerebri lateralis of Toldt, which for the rest is equivalent to the cisterna fossæ Sylvii of the English anatomist; the cisterna venæ cerebri magnæ of Toldt represents the posterior extremity of Quain's cisterna corporis callosi, the greater part of which, however, lying above the corpus callosum, is not indicated in Fig. 1232. "These spaces," writes Quain (*op. cit.*, vol. iii., part i., p. 188), "are all in free communication with one another, being only partly separated by imperfect septa of subarachnoid tissue. They receive the subarachnoid clefts (*flumina*) which follow the course of the great fissures (Rolandic, Sylvian, parallel, etc.), and which themselves receive the clefts which follow the course of the secondary and tertiary fissures (*rivi* and *rivuli* of Duret)."

⁴¹⁰ *Lateral and Sigmoid Sinuses* (Fig. 1233, p. 803).—In this work the denotation of the term *lateral sinus* is restricted to that portion of the *lateral sinus* of most English authors which is in contact with the occipital and parietal bones, the remaining, temporal, portion of the *lateral sinus* of English authors being here called the **sigmoid sinus*. This matter is more fully explained in the Appendix to Part V., note ³⁶⁴.

⁴¹¹ *Diaphragma Sella and Foramen Diaphragmatis Sella* (Fig. 1234, p. 804).—The layer of the dura mater which forms the roof of the pituitary fossa (see note ² to p. 60, in Part I.) has been somewhat variously named. Toldt's name, *diaphragma sella*, is sometimes used in England; the *foramen diaphragmatis sella* is the central aperture in the diaphragm through which the infundibulum passes to the pituitary body. According to Quain (*op. cit.*, vol. iii., part i., p. 182), "the portion of dura mater which stretches over the sella turcica, and, pierced by a small hole for the infundibulum, covers the pituitary body, is sometimes spoken of as the *operculum*, or *tentorium of the hypophysis*." According to Macalister (*op. cit.*, p. 530), the dura mater "forms a shelf-like *pituitary diaphragm* with a small central hole for the infundibulum." In this work I have chosen the names *pituitary diaphragm* and *orifice of the pituitary diaphragm* as the English equivalents of *diaphragma sella* and *foramen diaphragmatis sella*,

respectively (see Fig. 1234, p. 804, Figs. 1235 and 1236, p. 805, and Fig. 1239, p. 808).

⁴¹² **Notch of the Tentorium* (Figs. 1235, 1236, p. 805).—The somewhat inappropriate name of *superior occipital foramen* is applied by Macalister to what Toldt calls the *incisura tentorii*, viz., the aperture bounded behind and laterally by the free margin of the tentorium, through which the isthmus encephali passes with the basilar artery and the third and fourth cranial nerves. The *inferior occipital foramen* is better known as the *foramen magnum*.

⁴¹³ *Posterior Cutaneous Branches* (Fig. 1240, p. 810).—These are the cutaneous offsets of the posterior primary divisions of the spinal nerves, being the terminal portions of these nerves which reach the integument after passing through and supplying the muscles of the back. Fig. 1240 is diagrammatic, and it must not be supposed that as an actual fact from both the external and the internal branch of the posterior primary division of each dorsal nerve a posterior cutaneous branch is derived, giving external and internal offsets. According to Von Langer and Toldt (*op. cit.*, p. 678), "the *posterior cutaneous branches*, *rami cutanei dorsales*, proceed in the case of the posterior primary divisions of the upper dorsal nerves from the inner branches only, whereas in the case of the posterior primary divisions of the lower dorsal nerves the outer branches furnish the largest cutaneous offset." It must be observed that the terms *internal branch* and *external branch* (of the posterior primary division) are not, strictly speaking, the English equivalents of *ramus cutaneus dorsalis medialis* and *ramus cutaneus dorsalis lateralis*, respectively; but in Fig. 1240 the author has applied these Latin names to the *posterior cutaneous branches* before their emergence from the muscles, and in the case of the *ramus medialis* even before the origin of the muscular branch.

⁴¹⁴ *Intercostal Nerves* (Ibid.).—The upper six intercostal nerves, the distribution of which is confined to the parietes of the thorax, are sometimes distinguished as the *pectoral intercostal nerves*; the lower six, the anterior terminal branches of which supply the anterior wall of the abdomen, are similarly distinguished as the *abdominal intercostal nerves*. The twelfth nerve, being situated below the last rib, and therefore wholly contained in the abdominal wall, is for this reason sometimes called the *subcostal nerve*.

⁴¹⁵ **Ansa* (Fig. 1243, p. 812).—"Exact enumeration of the nerve fibres [of the roots of the spinal nerves] has shown that the total number of entering and emerging fibres is the same on the two sides of the spinal cord, but it has further established that the individual roots of any one pair do not always contain the same number of fibres on both sides, and that the root-bundles are therefore often asymmetrical. Hence it happens that a particular nerve fibre does not always emerge in the same root; none the less, owing to the fact that their destinations are constant, aberrant fibres are by means of anastomoses reconducted into their appropriate paths. Anastomoses of this character are met with as high up as the nerve roots themselves; they are especially common between the cervical nerve roots, and are found more frequently connecting the sensory than connecting the motor nerve roots. Such anastomoses between the nerve roots are known as *ansa* (loops)" (Von Langer and Toldt, *op. cit.*, p. 586). Quain says merely (*op. cit.*, vol. iii., part ii., p. 276) that "communications between the root filaments (especially the posterior) of adjoining nerves, are frequently met with"; but the term *ansa* is not used by this author.

⁴¹⁶ *Third Occipital Nerve* (Fig. 1245, p. 813).—"From the cutaneous branch of [the internal branch of the posterior primary division of] the third [cervical] nerve an offset passes upwards

to the integument on the lower part of the occiput, lying at the inner side of the great occipital nerve; this is sometimes called the *third occipital nerve*." Quain (*op. cit.*, vol. iii., part ii., p. 280) thus describes this nerve as normal, though Toldt calls it a *variety*. It is not mentioned by Von Langer and Toldt in their "Anatomy."

⁴¹⁷ *Mammary Branches* (Fig. 1247, p. 815).—"From the *lateral and anterior cutaneous nerves of the thorax* special offsets are furnished to the mammary gland, the *outer mammary branches* being derived from the anterior branches of the lateral offsets of the fourth, fifth, and sixth intercostal nerves, and the *inner mammary branches* from the external branches of the anterior (terminal) offsets of the third and fourth intercostal nerves" (Von Langer and Toldt, *op. cit.*, p. 682).

⁴¹⁸ *Subscapular Nerves* (Ibid.).—There are usually three *subscapular nerves*. That which supplies the upper part of the subscapularis muscle, the smallest of the three, is the *upper subscapular nerve*; that which supplies the latissimus dorsi muscle, the largest of the three, is called by Quain the *middle or long subscapular nerve*, by Macalister the *long subscapular nerve*, and by Toldt *N. thoracodorsalis*; that which supplies the teres major muscle and the lower part of the subscapularis muscle is called by Quain the *lower subscapular nerve*, and by Macalister the *middle subscapular nerve*.

⁴¹⁹ *Communicating Cervical Nerves* (Fig. 1248, p. 816).—These are the branches from the second and third cervical nerves, respectively, which join the *descending cervical nerve* (*descendens noni*—see note ⁴²⁰ below) in the *ansa cervicalis* (see Fig. 1249, p. 817). There appears to be no complete Latin name for these branches in the author's terminology. He calls them *communicating branches to the ramus descendens nervi hypoglossi*.

⁴²⁰ *Descending Cervical Nerve* (Fig. 1249, p. 817).—Macalister denotes this nerve by the Latin name *nervus descendens cervicis*. It is, however, still very commonly known by the old name of *descendens noni*, the hypoglossal nerve, the twelfth cranial nerve of Soemmerring, being the ninth cranial nerve, *nervus nonus*, in the enumeration of Willis.

⁴²¹ *Ansa Cervicalis* (Ibid.).—This loop, formed by the union of the *descending cervical nerve* (see note ⁴²⁰ above) with the *communicating cervical nerves* (see note ⁴¹⁹ above), is often known in England by the name used by Toldt, *ansa hypoglossi*. This name, indeed, is more distinctive than the name *ansa cervicalis*, used by Quain, and the name *ansa infrahyoidea*, used by Macalister.

⁴²² *Cardiac Branches of the Pneumogastric Nerve* (Ibid.).—The *cervical cardiac branches* of the vagus arise both at the upper and the lower part of the neck. The *upper cervical cardiac branches* are small filaments which join the cardiac branches of the sympathetic; these are ignored in Toldt's nomenclature, and for this reason the *lower cervical cardiac branch* of the vagus, which arises at the lower part of the neck, is called by him *ramus cardiacus superior nervi vagi*. The *thoracic cardiac branches* of the vagus (on the left side usually arising from the inferior or recurrent laryngeal nerve) are by Toldt called *ramus cardiacus inferior nervi vagi*.

⁴²³ *Great Auricular Nerve* (Fig. 1250, p. 818).—In addition to *facial and auricular branches*, corresponding respectively to the *ramus anterior* and *ramus posterior* of Toldt, the *great auricular nerve* commonly sends an offset to the integument over the upper part of the sternocleidomastoid muscle and the mastoid process, which is separately named by Quain the *mastoid branch*. This branch is not accounted for in Toldt's nomenclature. Sometimes it is a separate offset of the cervical plexus, ascending between the great auricular and small occipital nerves.

⁴²⁴ **Phrenico-abdominal Branch* (Fig. 1252, p. 820).—"Some of the offsets of the phrenic nerve, *rami phrenico-abdominales*, pass

through the caval and oesophageal openings in the diaphragm, and also on the left side in front of the central tendon between the muscular fasciculi. For the most part these filaments are lost in the crura of the diaphragm, but some pass to the serous investment of the liver and to the coeliac plexus. The distribution of the phrenic nerve shows that it is not exclusively motor in function" (Von Langer and Toldt, *op. cit.*, p. 681). A description of these terminal offsets of the phrenic nerve is given by Quain, but neither this author nor Macalister makes use of the name **phrenico-abdominal branches*.

⁴²⁵ **Posterior Thoracic Nerves* (Fig. 1253, p. 821).—In the German official nomenclature the name *nervi thoracales posteriores* is a general name for the *n. dorsalis scapulae* and *n. thoracalis longus*, the *nerve to the rhomboid muscles* and the *posterior thoracic nerve* of English authors. The latter nerve was formerly known as the *external respiratory nerve* of Bell.

⁴²⁶ *Cords of the Brachial Plexus* (Fig. 1255, p. 823).—These are usually distinguished as *outer, inner, and posterior*, corresponding strictly to the *fasciculus lateralis*, *fasciculus medialis*, and *fasciculus posterior* of Toldt's nomenclature. Sometimes, however, the *outer cord* is called the *upper cord*, and the *inner cord* the *lower cord*, of the brachial plexus.

⁴²⁷ *Nerve to the Inner Head of the Triceps and Ulnar Collateral Nerve* (Ibid.).—The *nerve to the inner head of the triceps* divides into an upper, short branch, which passes immediately to the muscle, and a lower, long branch, "the *ulnar collateral*, which descends so close to the ulnar nerve that it often appears to join it." (Macalister, *op. cit.*, p. 298). Separating from the ulnar nerve a little above the elbow, it enters the lower short fibres of the internal or deep head. The name of *ulnar collateral nerve* was given to this long filament by Krause.

⁴²⁸ (Ibid.) According to Quain, the cutaneous area supplied by the musculocutaneous nerve lies entirely below the elbow, and the skin on the outer side of the elbow, to which in the specimen shown in Fig. 1255 a branch is furnished by the musculocutaneous nerve, is, according to Quain, normally supplied by the *upper external cutaneous branch of the musculospiral nerve* (*nervus cutaneus brachii posterior* of Toldt).

⁴²⁹ *Cutaneous Branches of the Musculospiral Nerve* (Fig. 1256, p. 824).—These are usually described by English anatomists as three in number: (1) *Internal cutaneous branch of the musculospiral nerve* (*posterior internal*, or *superior branch*, according to Macalister), arising in the axilla, often in common with the nerve to the inner head of the triceps (see note ⁴²⁷ above), and supplying the skin over the long head of the triceps muscle and behind the cutaneous area of the intercostohumeral nerve—this branch is identified by Quain with the *n. cutaneus brachii posterior* of the Continental nomenclature; (2) the *upper external cutaneous branch*, which supplies the lower half of the upper arm on its outer and anterior aspects (see Figs. 1270 and 1271, p. 835); (3) the *lower external cutaneous branch* (this branch and the previous one, which often arise in common from the main trunk, are called by Macalister the *posterior external cutaneous branch of the musculospiral nerve*), which supplies the outer half of the back of the forearm. Toldt ignores entirely the *internal cutaneous offset* of English anatomists, and describes two cutaneous branches only of the musculospiral nerve: the *nervus cutaneus brachii posterior*, the *upper external cutaneous branch*, and the *nervus cutaneus anti-brachii dorsalis*, the *lower external cutaneous branch*, of the musculospiral nerve. As far, then, as Toldt's use of the German official nomenclature is concerned, Quain's identification of the *nervus cutaneus brachii posterior* with the *internal cutaneous branch of the musculospiral nerve* is erroneous.

⁴³⁰ *Radial Nerve* (Fig. 1257, p. 825).—It must be carefully noted that the *nervus radialis* of Continental anatomists is the *musculospiral* trunk of English writers. Just above the elbow this trunk divides into two terminal branches; one of these, *ramus superficialis nervi radialis* in the Continental nomenclature, a purely cutaneous nerve, is the *radial nerve* of English authors; while the other, *ramus profundus nervi radialis*, the muscular nerve of the back of the forearm, is known in England as the *posterior interosseous nerve* (see note ⁴³¹ below).

⁴³¹ *Posterior Interosseous Nerve* (Ibid.).—This name is by English anatomists applied to the nerve designated *ramus profundus nervi radialis* by Toldt (see note ⁴³⁰ above); and the name *nervus interosseus* (*antibrachii dorsalis*) is used on the Continent in a more restricted sense, as shown by the following quotation (Von Langer and Toldt, *op. cit.*, p. 687): "The *ramus profundus nervi radialis* winds round the neck of the radius, between the layers of the supinator radii brevis muscle, and is for the most part distributed to the muscular bellies in the upper part of the back of the forearm: one offset only, designated *nervus interosseus dorsalis*, extends as far down as the wrist-joint, supplying the three extensors of the thumb and the capsule of the wrist-joint." The pseudo-ganglionic enlargement of the lower end of this nerve is well shown in Fig. 1257.

⁴³² *Nerve to the Anconeus Muscle* (Ibid.).—According to both Quain and Macalister, this nerve descends to its destination within the substance of the *inner head* of the triceps muscle; but alike in the marginal description and that at the foot of Fig. 1257 the part of the triceps in which the course of the nerve to the anconeus muscle has been traced is called *caput laterale musculi tricipitis brachii*. As a matter of fact, though this part of the triceps is situate on the outer aspect of the muscle, all the fibres arising from the posterior surface of the humerus below and internal to the spiral groove, and even from the back of the lower part of the external intermuscular septum, are regarded as belonging to the *internal* or *deep* head of the triceps, though the outermost of these fibres pass inwards to their insertion into the outer margin of the common tendon. Some of these outer fibres of the internal head are usually continued below into the fibres of the anconeus muscle, and it is under cover of these fibres that the branch of the musculospiral nerve which supplies the latter muscle passes to its destination.

⁴³³ (Fig. 1258, p. 826.) By Quain the terminal branches of the ulnar nerve are termed *superficial part* and *deep part*, respectively; in the text, however, I have followed the author's nomenclature in using the terms *superficial branch* and *deep branch*. More distinctive names would be *superficial terminal* and *deep terminal branch of the ulnar nerve*.

⁴³⁴ *Palmar Digital Nerves* (Fig. 1260, p. 828).—As in the case of the palmar digital arteries and veins, the author distinguishes between the digital nerves in the palm of the hand (before division) and the digital nerves on the palmar surfaces of the fingers (after division) as *nervi digitales volares communes* and *nervi digitales volares proprii*, respectively. This distinction is ignored by Quain and Macalister, but I have in the text named the palmar digital nerves before division (*common*) *palmar digital nerves*, and after division *collateral palmar digital nerves*.

⁴³⁵ *Perforating Branches of the Deep Part of the Ulnar Nerve* (Fig. 1261, p. 829).—The twig to which in Fig. 1261 the name of *perforating branch* is given has no Latin name in the author's terminology, being called merely (in German) *offset to the dorsal surface of the metacarpus*. Quain, however, writes (*op. cit.*, vol. iii., part ii., p. 300: "Raubert describes small *perforating branches*, which accompany the superior perforating arteries in

the interosseous spaces, and join the terminal filaments of the posterior interosseous nerve."

⁴³⁶ **Anterior Brachial Cutaneous Branches of the Internal Cutaneous Nerve* (Fig. 1262, p. 830).—Macalister gives no special name to these branches; and Quain calls them merely *branches to the integument of the arm*, a name insufficiently distinctive. I have therefore used in the text a literal translation of the Latin name employed by the author, *rami cutanei brachii anteriores nervi cutanei antibrachii medialis*.

⁴³⁷ **Ulnar Communicating Branch* (Fig. 1265, p. 831).—Describing the *dorsal digital branches* of the radial nerve (*ramus superficialis nervi radialis*—see note ⁴³⁰ above), Von Langer and Toldt write (*op. cit.*, p. 687): "A fine branch of communication passes from the nerve to the middle finger to the corresponding offset of the ulnar nerve." Quain describes this communication between the dorsal digital branches of the radial and ulnar nerves respectively, but gives no special name to the communicating branches; and Macalister writes (*op. cit.*, p. 299): "A *communicating branch* (of the radial nerve) joins the dorsal branch of the ulnar, and with it gives a common supply to the cleft between the middle and ring fingers."

⁴³⁸ *Sacral and Pudic Plexuses* (Fig. 1272, p. 836).—"In the description of the sacral plexus a division is sometimes made into two subordinate plexuses. The larger upper part, which ends in the great sciatic nerve and gives off the other branches to the limb, is distinguished as the *sciatic plexus* (*plexus ischiadicus*), while the smaller lower part, including the pudic nerve together with the visceral and muscular branches of the third and fourth sacral nerves, is designated the *pudic plexus* (*plexus pudendus*)" (Quain, *op. cit.*, vol. iii., part ii., p. 324). It must be observed that the author uses the term *plexus sacralis*, not in the wider sense of the above quotation, but to denote merely what is there called the *sciatic plexus*. This latter term, however, is not current in England, and I have therefore used the name *sacral plexus* as the English equivalent of the *plexus sacralis* of the author. The *pudic plexus* (*plexus pudendus*) comprises a part of the third and nearly all the fourth sacral nerve; its branches are, in addition to the large *pudic trunk*, *muscular branches* to the levator ani and coccygeus muscles and to the external sphincter of the anus (*hamorrhoidal* or *perineal branch*), and *visceral branches* (*middle hamorrhoidal, inferior vesical, and vaginal nerves*). A small filament from the fourth sacral nerve combines with the fifth sacral nerve and the coccygeal nerve to form what is sometimes named the *coccygeal plexus*, and this latter gives rise to the *anococcygeal* or *subcaudal nerve*. The pudic and coccygeal plexuses as described above are treated by Macalister as a single plexus, to which he gives the name of *pudendo-anal plexus*.

⁴³⁹ *Rami Cutanei Femoris Anteriores* (Fig. 1273, p. 837).—"Among the cutaneous offsets of the anterior crural or femoral nerve are the **anterior cutaneous branches of the thigh*. Two to four in number, they perforate the deep fascia at different levels, and ramify on the front of the thigh; one of these branches accompanies the femoral portion of the internal saphenous vein" (Von Langer and Toldt, *op. cit.*, p. 692). Under this name of **anterior cutaneous branches of the thigh*, the author includes the *middle cutaneous* and *internal cutaneous nerves* of English anatomists. As far as possible, I have in the text discriminated between these nerves, in accordance with the English nomenclature.

⁴⁴⁰ *Divisions of the Obturator Nerve* (Fig. 1275, p. 839).—The *anterior* or *superficial part* of the obturator nerve (*ramus anterior nervi obturatorii*) and the *posterior* or *deep part* of the obturator nerve (*ramus posterior nervi obturatorii*) are by Macalister called *anterior obturator nerve* and *posterior obturator nerve*, respectively.

⁴⁴¹ (Ibid.) The *cutaneous branch of the anterior crural nerve* mentioned in the text may be derived either from the *internal cutaneous* or the *internal saphenous branch of the anterior crural* or *femoral nerve*, for communicating offsets from both these nerves combine with the *cutaneous branch of the obturator nerve* to form an interlacement beneath the lower end of the sartorius muscle.

⁴⁴² *N. Tibialis* (Fig. 1276, p. 840).—In the author's nomenclature, the name *nervus tibialis* is given to the larger of the two terminal branches of the *great sciatic nerve* from the point of division of the parent trunk until the **tibial nerve* itself divides (usually just below the internal annular ligament of the ankle) into the *internal* and *external plantar nerves*. In England, however, the upper part of this nerve, as far as the lower border of the popliteus muscle, is known as the *internal popliteal nerve*, and for the rest of its course it receives the name of *posterior tibial nerve*. Macalister speaks of the terminal branches of the *great sciatic nerve* as the *peroneal* and *popliteal nerves*, respectively; but in his terminology also the latter nerve changes its name to *posterior tibial* at the lower border of the popliteus muscle.

⁴⁴³ *Inferior Pudendal Nerve* (Fig. 1277, p. 841).—In the specimen shown in Fig. 1277 the name *inferior pudendal nerve* (*rami perineales nervi cutanei femoris posterioris* in the author's terminology) is attached to two distinct branches of the small sciatic trunk. These two branches represent the principal branches of distribution of the *inferior pudendal nerve* when the nerve is normal. This variety is frequently met with.

⁴⁴⁴ *Calcaneoplantar Nerve* (Fig. 1279, p. 843).—According to Quain (*op. cit.*, vol. iii., part ii., p. 333), "the *calcaneoplantar nerve* is given off by the posterior tibial in the lower part of the leg, and becomes superficial by piercing the internal annular ligament. It divides into *internal calcaneal branches* which ramify in the integument on the inner side of the heel, and *plantar cutaneous branches* which supply the skin of the inner and hinder part of the sole." The *rami calcanei mediales* of Toldt include the *plantar cutaneous* as well as the *internal calcaneal branches* of the *calcaneoplantar nerve*; thus, in Fig. 1279, of the branches labelled *internal calcaneal*, the anterior set are really the *plantar cutaneous branches* of English anatomists.

⁴⁴⁵ **Interosseous Nerve of the Leg* (Ibid.).—"The *nerve to the popliteus muscle*, which arises from the internal popliteal nerve near the lower end of the popliteal space, gives off the slender *nervus interosseus cruris*; this descends partly in the substance of the interosseous membrane, partly on the posterior surface of this membrane, which it supplies, giving fine filaments also to the periosteum of the tibia, while its terminal offsets supply the inferior tibiofibular articulation and the ankle-joint" (Von Langer and Toldt, *op. cit.*, pp. 694, 695). In England this small nerve is not usually dignified by the name of **interosseous nerve of the leg*. Quain and Macalister merely state that the *nerve to the popliteus muscle* gives a branch to the interosseous membrane.

⁴⁴⁶ *External Terminal Branch of the Anterior Tibial Nerve* (Fig. 1281, p. 845).—The branch in Fig. 1281 labelled *muscular branch to the extensor brevis digitorum pedis muscle*, together with the branches labelled *offsets to the tarsal joints*, represent what is usually known in English anatomical nomenclature as the *external terminal branch of the anterior tibial nerve* (the *internal terminal branch* being that which supplies the dorsal digital nerves of the outer side of the great toe and the inner side of the second toe). The *external terminal branch* resembles the *posterior interosseous nerve* of the forearm in presenting, as a rule, a pseudo-

ganglionic enlargement. This is, however, not shown in Fig. 1281.

⁴⁴⁷ *Jugular Ganglion* (Fig. 1296, p. 858).—The *upper ganglion* or *ganglion of the root* of the pneumogastric or vagus nerve, the *ganglion jugulare* of the official German nomenclature, is, owing to its situation in the jugular foramen, sometimes known in England also by the name of *jugular ganglion*. The name is, however, better avoided, since its employment may lead to confusion with the upper ganglion of the glossopharyngeal nerve, which is always known in England by the name of *jugular ganglion* (*ganglion superius nervi glossopharyngei* in the official German nomenclature; sometimes called *Ehrenritter's ganglion* by German writers). This latter is also shown in Fig. 1296, just below the Roman figure IX.

⁴⁴⁸ *Visceral Arches and Visceral Clefts* (Fig. 1296, p. 858).—In the German original these structures are called *Kiemenbogen* and *Kiemenpalte*, respectively; literally, *branchial arch* and *branchial cleft*. This name depends on the respiratory function of these structures in the primitive ancestral vertebrates; but since this function is now obsolete, the names used in the text are to be preferred. In England also, however, some anatomists call the clefts *branchial clefts* or *gill-slits*; and of the arches, while the first is the *mandibular arch*, and the second the *hyoid arch*, the remainder are sometimes called *branchial arches*. The *first* or *mandibular visceral arch* sends forward on each side a process from which the upper jaw is formed; this is known as the *maxillary process* (*Oberkieferfortsatz*). The distal portion of the first arch, from which the lower jaw is formed, is by Toldt distinguished as the **mandibular process* (*Unterkieferfortsatz*), but this name is not used by Quain. (The primitive cartilage of the lower jaw is usually called *Meckel's cartilage*.)

⁴⁴⁹ *Nasal Nerve* (Fig. 1298, p. 859).—In the German official nomenclature, the *nervus nasociliaris* gives off the *nervus ethmoidalis anterior* through the anterior ethmoidal foramen to the nasal cavity. These form the proximal and distal portions, respectively, of the *nasal nerve* of English authors. The latter is known also as the *oculonasal* and as the *nasociliary nerve*.

⁴⁵⁰ **Posterior Nasal Branches* (Fig. 1298, p. 859).—The **rami nasales posteriores* of the official German nomenclature include the following branches in Quain's terminology: (1) the *nasopalatine nerve*; (2) the small *upper nasal branches* of Meckel's ganglion; (3) the *inferior nasal branches* of the large or anterior palatine nerve.

⁴⁵¹ *Canalis Incisivus* (Fig. 1302, p. 862).—The author appears to use this term indifferently of the *canals of Scarpa* and of the *canals of Stensen*. The former transmit the nasopalatine nerves; the latter, the palatine branches of the nasopalatine arteries.—See Macalister, *op. cit.*, p. 635.

⁴⁵² *Petrosal Nerves* (Fig. 1303, p. 863).—The *great superficial petrosal nerve* (sometimes called the *white* portion of the Vidian nerve) and the *small superficial petrosal nerve* (*long root of the otic ganglion*) are identical respectively with the *nervus petrosus superficialis major* and *nervus petrosus superficialis minor* of the German official nomenclature. Of the *deep petrosal nerves* of English anatomists, the *great deep petrosal nerve* (sometimes called the *grey* portion of the Vidian nerve) is in the German nomenclature known as the *nervus petrosus profundus* without further qualification. The *small deep petrosal nerve* (a branch from the tympanic plexus to the internal carotid plexus) must be identified with the *nervus caroticotympanicus superior* of the German nomenclature (see Fig. 1317, p. 874, and Fig. 1328, p. 886). Finally, the *external superficial petrosal nerve*, an occasional branch connecting the geniculate ganglion with the sympathetic on the middle meningeal artery, is apparently ignored by Toldt.

⁴⁴³ *Sublingual Nerve* (Fig. 1304, p. 864).—Macalister distinguishes by this name "a branch which passes external to and supplies the sublingual gland, the gums, and the mucosa beneath the tongue" (*op. cit.*, p. 599). This is the *nervus sublingualis* of the German official nomenclature. Quain says merely that "some delicate filaments are distributed to the sublingual gland."

⁴⁴⁴ *Deep Temporal, Buccal, and Masseteric Nerves* (Fig. 1305, p. 865).—The arrangement of these branches of the inferior maxillary nerve being a somewhat variable one, different authors have accepted different arrangements as the normal. Quain describes the *deep temporal nerves* as usually three in number, the *anterior* being given off by the *buccal nerve* after it has perforated the external pterygoid muscle, the *middle* arising independently, and the *posterior* generally conjoined with the *masseteric nerve*. According to Von Langer and Toldt (*op. cit.*), the *buccal nerve* (*n. buccinatorius*) consists of sensory fibres only, and the *deep temporal nerves*, two only in number, *anterior* and *posterior*, and the *masseteric nerve* are independent branches of the inferior maxillary nerve. Macalister also describes two *deep temporal nerves* only, the *anterior* arising a little in front of the *buccal nerve*, and the *posterior* dividing into two branches, the *masseteric* and the *posterior temporal*. A *middle deep temporal nerve* is, however, shown by Toldt in Fig. 1320, p. 877. In the text I have not attempted to harmonize these discrepancies, but have followed Toldt's nomenclature.

⁴⁴⁵ **Rami Nsales Interni* (Fig. 1306, p. 866).—The **internal nasal branches* of the *infra-orbital nerve*, supplying the skin just within the margin of the nostril, are not distinguished by Quain from the *lateral nasal branches* of this nerve.

⁴⁴⁶ *Mental and Inferior Labial Branches* (Fig. 1306, p. 866).—"The *mental or labial nerve*," according to Quain (*op. cit.*, vol. iii., part ii., p. 247), "emerging from the bone by the mental foramen, divides beneath the depressor anguli oris into three parts—an inferior, which descends to the integument of the chin, and two superior, which ascend to the skin and mucous membrane of the lower lip." By this author, however, these branches are not distinguished by the names used in the text.

⁴⁴⁷ *Divisions of the Inferior Maxillary Nerve* (Fig. 1307, p. 867).—After giving off the *recurrent or middle meningeal branch*, the inferior maxillary nerve divides, about $\frac{1}{2}$ inch below the foramen ovale, into two primary branches, called by Quain the *small, anterior, or upper portion*, and the *large, posterior, or lower portion*, respectively; and by Macalister, *superior branch* and *inferior branch* respectively. The *large or posterior portion*, chiefly sensory in function, divides into three trunks, the *auriculotemporal, lingual, and inferior dental nerves*. The *small or anterior portion*, chiefly motor, gives, in addition to the *buccal nerve* (sensory in function), the nerves to the temporal, masseter, and external pterygoid muscles (see above, note ⁴⁴⁴); for this reason it is known in German as the *nervus masticatorius*. Functionally, the *internal pterygoid nerve* belongs also to the **masticatory nerve*; usually, however, this branch arises from the undivided trunk.

⁴⁴⁸ *Sphenomaxillary Muscle* (Fig. 1309, p. 868).—"In the region of the sphenomaxillary fissure, incorporated with the orbital periosteum, there is a layer of smooth muscular fibres, having the appearance of a greyish-red mass. This is the so-called *musculus orbitalis*" (Von Langer and Toldt, *op. cit.*, p. 783). This layer of unstriated muscular tissue was first described by Müller, and sometimes goes by the name of *Müller's muscle*. But Müller also described a layer of unstriated muscular tissue met with in each eyelid, and these layers also go by the name of *Müller's muscle*. (By Toldt they are called *Mm. tarsales superiores*

et inferior—see Fig. 1386, p. 910, and note ⁴⁴⁴ below.) Gowers, for instance, writes ("Diseases of the Nervous System," 2nd ed., vol. ii., pp. 886, 887): "The unstriated muscular fibres of Müller, which are innervated by the sympathetic and run from the eyelid to the membranous lining of the orbit, are generally believed to be capable, by their contraction, of causing prominence of the eyeball." On the other hand, when Fagge, writing also on exophthalmos, states: "A third hypothesis is that exophthalmos may in part be caused by contraction of Müller's non-striated orbital muscle" ("Medicine," 2nd ed., vol. i., p. 1011), he refers to the layer of smooth muscular fibres bridging over the sphenomaxillary fissure. To avoid this confusion, the use of the term *Müller's muscle* should be abandoned, and the *musculus orbitalis* of the German official nomenclature should be denoted in England by the name of *sphenomaxillary muscle*. (This name is used by Quain—*op. cit.*, vol. iii., part ii., p. 4, footnote.)

⁴⁴⁹ *Superficial Temporal Nerve* (Fig. 1313, p. 870).—According to Quain's nomenclature, the *auriculotemporal nerve*, on emerging from beneath the parotid gland and passing upwards over the zygoma, becomes the *superficial temporal nerve*. In the German official nomenclature, the nerve remains the *nervus auriculotemporalis* until it breaks up into the *rami temporales superficiales* shown in Fig. 1313. The *superficial temporal nerve* of Quain is by Macalister named the *terminal branch* of the auriculotemporal nerve.

⁴⁵⁰ **Ansa Cervicalis Superficialis* (Fig. 1313, p. 870).—I mark this term with an asterisk because it is used neither by Quain nor by Macalister. Both of these authors describe the loop or loops of communication, on the outer surface of the sternocleidomastoid muscle, between the superficial cervical nerve and the cervical or inframaxillary branch of the facial nerve, but neither denotes the communication by any distinctive name. The drawback to the use in England of the Continental name of *ansa cervicalis superficialis* is that the name *ansa cervicalis* is already in use in this country to denote the loop of communication known on the Continent as the *ansa hypoglossi* (see Fig. 1249, p. 817, and Fig. 1320, p. 877). All possibility of confusion would be avoided if the loop of communication between the *facial* and the *superficial cervical nerves* were to be termed *ansa cervicofacialis*, but as this name is a neologism I have not ventured to incorporate it in the text.

⁴⁵¹ *Pes Anserinus* (Fig. 1314, p. 871).—This is the name usually employed in England to denote the radiating plexus formed in the parotid gland and on the side of the face by the branches of the facial nerve as they pass to their destination. In the German official nomenclature this structure is known as the *plexus parotideus*, the name *pes anserinus* being given on the Continent to an entirely different structure, viz., the aponeurotic expansion of the tendon of insertion of the sartorius muscle.—See footnote to p. 351 in Part III.

⁴⁵² *Inferior or Recurrent Laryngeal Nerve* (Fig. 1315, p. 872).—In the German official nomenclature this nerve, at its first origin from the vagus trunk, is known as the *nervus recurrens*; only after it has furnished numerous *tracheal and œsophageal branches* does the *terminal branch* (as it is esteemed) of the *nervus recurrens* receive the name of *nervus laryngeus inferior*. In England the nerve is called indifferently *inferior laryngeal* or *recurrent laryngeal nerve* throughout its whole course.

⁴⁵³ (Fig. 1315, p. 872).—Sometimes known in England also as the *jugular ganglion* of the vagus nerve. (Macalister makes use of this name.) It is better, however, to reserve the name *jugular ganglion* for the upper ganglion of the glossopharyngeal nerve.—See also note ⁴⁴⁷ above.

⁴⁶⁴ **Œsophageal Cords, Anterior and Posterior* (Fig. 1315, p. 872).—As this name is used neither by Quain nor by Macalister, I quote the following passage from Von Langer and Toldt (*op. cit.*, p. 716): "The name of *chorda œsophagea, anterior et posterior*, is given to two nervous trunks, one of which descends along the anterior, the other along the posterior surface of the œsophagus. These trunks are connected by means of numerous offsets, which, as they pass from one trunk to the other, branch and reunite to form the *plexus œsophageus*. From this plexus arise a large number of *rami œsophagei* for the thoracic and abdominal portions of the œsophagus. The œsophageal cords are the continuations of the trunks of the pneumogastric or vagus nerves; they are differentiated from these latter by the fact that each cord receives from the other numerous branches of communication; but, notwithstanding this, the *posterior* œsophageal cord must be regarded as the continuation of the *right* pneumogastric, and the *anterior* œsophageal cord as the continuation of the *left* pneumogastric nerve. This peculiar relation of the œsophageal cords to the œsophagus is brought about by the rotation of the stomach which takes place during intra-uterine life, as a result of which the primitive left side of the stomach becomes the anterior surface, and the primitive right side becomes the posterior surface of that organ."

⁴⁶⁵ *Gastric Plexus* (Fig. 1315, p. 872).—Quain and Macalister both speak of the *gastric plexus* as a single whole. Toldt, on the other hand, describes four separate plexuses, *anterior, posterior, superior, and inferior* gastric plexuses. The difference is not one of much significance. It is true that the nerve-supply of the stomach may be said to reach that organ in four sets of branches: to the front of the stomach from the *left pneumogastric*, to the back from the *right pneumogastric nerve* (see note ⁴⁶⁴ above); to the small curvature from the solar plexus by the branches that accompany the coronary artery of the stomach and form the *coronary plexus*, to the great curvature (also primarily from the sympathetic) by the *right and left gastro-epiploic plexuses*. But when we remember that not only do the nerves from these different sources intermingle freely on the walls of the stomach, but further that, by means of the *celiac branches* of the vagus (see note ⁴⁶⁶ below), vagal fibres are incorporated with many (if not all) of the branches of the solar plexus, it seems that the *gastric plexus* can be most usefully regarded as forming a single whole.

⁴⁶⁶ *Celiac Branches* (Fig. 1315, p. 872).—Quain, in his account of the *gastric branches* of the pneumogastric nerve, remarks that a large portion of the right nerve passes to the solar, splenic, and left renal plexuses of the sympathetic; but he does not mention the *celiac branches* more particularly, nor is this name used by Macalister. Von Langer and Toldt (*op. cit.*, p. 717) state that of the fibres of the "posterior œsophageal cord (right pneumogastric or vagus nerve—see note ⁴⁶⁴ above) a small part only passes in the form of *gastric branches* to the *posterior gastric plexus* (see note ⁴⁶⁵ above); "the greater part of the fibres of this cord pass as *celiac branches* along the coronary artery of the stomach to the celiac axis, where they join the semilunar ganglia."

⁴⁶⁷ *Jugular Ganglion* (Fig. 1316, p. 873).—This name, here given to the *ganglion superius nervi glossopharyngei* of the Continental nomenclature, is by some English authors given to the *upper ganglion* or *ganglion of the root of the pneumogastric nerve*. (See note ⁴⁶⁷ above.) The jugular ganglion of the glossopharyngeal nerve is known also as *Ehrenritter's ganglion*.

⁴⁶⁸ *Caroticotympanic Nerves* (Fig. 1317, p. 874).—Quain writes (*op. cit.*, vol. iii., part ii., p. 260): "The communicating branches (of the tympanic nerve) are, in addition to the small superficial petrosal nerve with its filament of union with the facial, one or

two twigs (*caroticotympanic*) which pass downwards and forwards through the anterior wall of the tympanum to the carotid canal and join the sympathetic on the carotid artery, and the *small deep petrosal nerve* which runs forwards in a minute canal in the substance of the *processus cochleariformis* and enters the foramen lacerum, where it joins the carotid plexus of the sympathetic, or sometimes one of the large petrosal nerves."—If I am right in identifying the *nervus caroticotympanicus superior* with the *small deep petrosal nerve* of English authors (see note ⁴⁶² above)—Von Langer and Toldt's description is not sufficiently minute to make this point quite clear—the *nervus caroticotympanicus inferior* should perhaps be called the *caroticotympanic nerve* without further qualification.

⁴⁶⁹ **Jugular Nerve* (Fig. 1317, p. 874).—Quain describes this nerve, but uses only the name used on the Continent, *N. jugularis* (and that in a parenthesis merely). He writes: "Another branch [of the superior cervical ganglion], which is directed upwards from the ganglion, divides at the base of the skull into two filaments, one of which ends in the petrosal ganglion of the glossopharyngeal nerve; while the other, entering the jugular foramen, joins the ganglion of the root of the pneumogastric."—*Jugular nerve*, the English equivalent of the *nervus jugularis* of the official German nomenclature, is a name at once distinctive and appropriate, and may well be adopted.

⁴⁷⁰ (Fig. 1317, p. 874).—The name *musculus hyopharyngeus* is used here by Toldt, but nowhere else in this work, to denote the *middle constrictor of the pharynx*. The parts of this muscle attached respectively to the great and the small cornu of the hyoid bone are, however, often known as the *ceratopharyngeus* and *chondropharyngeus* muscles. The *thyropharyngeus* muscle is the upper part of the inferior constrictor of the pharynx.—See Fig. 706, p. 433, in Part III., and note ¹ to same page.

⁴⁷¹ **Cardiac Plexus* (Fig. 1321, p. 878).—English anatomists make a distinction, which is ignored by Toldt, between a *superficial* and a *deep cardiac plexus*. The *superficial cardiac plexus* lies in the concavity of the arch of the aorta, between the ligamentum arteriosum and the right pulmonary artery; it receives the left superior cardiac nerve (of the sympathetic system) and the lower cervical cardiac branch of the left pneumogastric nerve; it contains the *ganglion of Wrisberg* (see Fig. 1330, p. 887). The *deep cardiac plexus* lies behind the arch of the aorta, in front of the lower end of the trachea, and above the bifurcation of the pulmonary artery; much larger than the superficial cardiac plexus, it receives all the cardiac nerves with the exception of the two mentioned above.

⁴⁷² **Lowest Cardiac Nerve* (Fig. 1326, p. 884).—This nerve is not mentioned by Quain or by Macalister. It is described in the following terms by Von Langer and Toldt (*op. cit.*, p. 721): "The *nervus cardiacus imus* is the lowest of the cardiac nerves. It arises from the first thoracic ganglion, and, having joined the inferior cardiac nerve, passes to the cardiac plexus. When the inferior cervical ganglion and the first thoracic ganglion are conjoined, the lowest and the inferior cardiac nerves form a common trunk, which arises from the ganglion by two or by three roots."

⁴⁷³ **Sinuvertebral Nerves* (Fig. 1329, p. 886).—Quain writes (*op. cit.*, vol. iii., part ii., p. 278): "Before dividing [into anterior and posterior primary divisions] each spinal nerve gives off a small *recurrent* or *meningeal branch*, which is joined by a filament from the communicating cord between the anterior division of the nerve and the sympathetic, and then runs inwards through the intervertebral foramen to the spinal canal, where it is distributed to the vertebræ and ligaments, the bloodvessels of the canal, and to the dura mater (Luschka, Rüdinger)." To the

intraspinal nerves formed in this manner by the union of the recurrent or meningeal branches of the spinal nerves with the sympathetic filaments from the rami communicantes, Toldt gives the name of *nervi sinuvertebrales*, a term used neither by Quain nor by Macalister.

⁴⁷⁴ *Celiac Plexus* (Fig. 1331, p. 888).—The term *plexus celiacus* is used by the author in a comprehensive sense, equivalent to the *solar* or *epigastric plexus* of English writers. In England the term *celiac plexus* is used to denote the anterior and upper part only of the solar plexus, which ensheathes the celiac axis, and subdivides, with that vessel, into the *coronary*, *hepatic*, and *splenic plexuses*.

⁴⁷⁵ *Smallest Splanchnic Nerve* (Ibid.).—The *renal branch of the small splanchnic nerve* is sometimes represented by a separate branch from the last thoracic ganglion to the renal plexus. This nerve was termed by Walter *nervus renalis posterior*, but is generally known in England as the *smallest splanchnic nerve*.

⁴⁷⁶ *Vesical Nerves* (Fig. 1333, p. 890).—The nerves in Fig. 1333 to which the names of *superior* and *inferior vesical nerves* are given are the branches proceeding from the *vesical plexus* to the upper and lower hemispheres, respectively, of the urinary bladder. The *inferior vesical nerves* shown in Fig. 1272, p. 836, on the other hand, are branches of the fourth sacral nerve (*puvic plexus*, see note ⁴³⁸ above) destined for the bladder, for the most part by way of the vesical plexus of the sympathetic.

⁴⁷⁷ *Hypogastric and Pelvic Plexuses* (Ibid.).—In the author's nomenclature the *plexus hypogastricus* is said to divide below into right and left portions, which still go by the name of *plexus hypogastricus*. In Quain's nomenclature the term *hypogastric plexus* denotes the upper median portion only of the *plexus hypogastricus* of Toldt, the paired lower portions being termed by Quain *right* and *left pelvic* or *inferior hypogastric plexuses*.

⁴⁷⁸ *Perichoroidal Space and Lamina Suprachoroidea* (Fig. 1337, p. 893).—In describing the lymph space between the sclerotic and the choroid, neither Quain nor Macalister employs the name *spatium perichoroideale* or its English equivalent, *perichoroidal space*, but these names are used by other English authorities. In describing parts of the eye Latin names are most commonly used, *lamina suprachoroidea*, for example, rather than *suprachoroidal membrane*, etc.

⁴⁷⁹ *Circular Ciliary Muscle* (Ibid.).—The *circular fibres* of the ciliary muscle, forming a ring round the insertion of the iris, make up the *circular ciliary muscle* of Müller, which is well developed in hypermetropic eyes, but atrophied, or even wanting, in myopic eyes.

⁴⁸⁰ *Zonule of Zinn or Suspensory Ligament of the Lens* (Ibid.).—The zonule of Zinn extends from the ora serrata forwards and inwards over the ciliary body, and thence inwards to be attached to the capsule of the lens. The inner free portion only of this structure is strictly entitled to the name *suspensory ligament of the lens*, but as this ligament is the functionally important part of the zonule of Zinn, and as the term *suspensory ligament of the lens* finds no place in Toldt's nomenclature, I have in the text rendered the term *zonula ciliaris* (Zinni) as *zonule of Zinn* or *suspensory ligament of the lens*. The *fibræ zonulares* are the radiating meridional fibres of which the zonule is made up. "Between the fibres of the zonule are numerous interspaces, the *spatia zonularia* (*zonular spaces*), which communicate with the posterior chamber, and are therefore filled with aqueous humour. A closed canal, such as was formerly believed to exist in the substance of the suspensory ligament of the lens, encircling the equator of the lens, known as the *canal of Petit*, has, however, no real existence" (Von Langer and Toldt, *op. cit.*, p. 771).

⁴⁸¹ *Rima Cornealis* (Ibid.).—"The transition from the con-

nective-tissue elements of the sclerotic into those of the cornea takes place along a sharply-defined circular zone in such a manner that the tissue of the sclerotic overlaps the margin of the corneal tissue, now in front, now behind, and thus the anterior margin of the sclerotic is, as it were, grooved to receive the corneal margin. This connection between the two structures receives the name of *rima cornealis*" (Von Langer and Toldt, *op. cit.*, p. 756). Both Quain (*op. cit.*, vol. iii., part iii., p. 17) and Macalister (*op. cit.*, p. 668) describe the connexion between the sclerotic and the cornea in similar terms, the latter writer saying, "In section the sclerotic seems to overlay the cornea, as the bezel overlaps the glass in a watch"; but neither of these authorities employs the name *rima cornealis*.

⁴⁸² **Annulus Ciliaris* and **Orbiculus Ciliaris* (Figs. 1338, 1339, p. 894).—These terms are not used by Quain, and I therefore quote definitions of their meaning from Von Langer and Toldt: "The middle coat of the eyeball, *tunica vasculosa oculi* . . . consists of two portions: a posterior and larger, the *choroid* (*coat*), and an anterior and smaller, the *iris*. The boundary-line between these two portions, which in position corresponds to the **rima cornealis* [see note ⁴⁸¹ above], is indicated on the convex surface of the middle coat when the outer coat has been removed by the anterior margin of a prominent pale blue tinted ring, the **annulus ciliaris*. Along this boundary-line the middle and outer coats of the eye are more firmly connected with one another than is elsewhere the case" (*op. cit.*, p. 760). "The ciliary body is separated from the region of the ora serrata of the retina by a narrow ring-shaped zone of the choroid, usually somewhat darker in colour than the rest, known as the **orbiculus ciliaris*. We thus recognise three regions in the choroid: an anterior, the *ciliary body*, a middle, the **orbiculus ciliaris*, and a posterior (much larger than the others), the *smooth portion* of the choroid. These three portions are clearly differentiated one from another by the arrangement of their bloodvessels" (*op. cit.*, p. 760).

⁴⁸³ *Plexus Gangliosisus Ciliaris* (Fig. 1340, p. 894).—The *ciliary gangliated plexus* lies within the substance of the ciliary muscle. The ciliary nerves form two other gangliated plexuses in connexion with the middle coat of the eye, one on the outer surface of the choroid, and the other within the substance of the iris. See Quain, *op. cit.*, vol. iii., part iii., p. 35.

⁴⁸⁴ **Ciliary Folds* (Figs. 1342, 1343, p. 895).—"In between the well-developed ciliary processes are small, slightly projecting eminences, having the same radial disposition as the processes. These are known as the *plicæ ciliares*" (Von Langer and Toldt, *op. cit.*, p. 760). These structures are not mentioned by Quain or Macalister.

⁴⁸⁵ **Corona Ciliaris* and *Corpus Ciliare* (Figs. 1341 to 1343, p. 895).—"The ring of ciliary processes surrounding the iris constitutes as a whole the *corona ciliaris*. The anterior portion of the choroid (with the ciliary processes) constitutes what is known as the *ciliary body* (*corpus ciliare*)" (Von Langer and Toldt, *op. cit.*, p. 760).

⁴⁸⁶ *Layers of the Choroid* (Fig. 1344, p. 895).—The choroid is bounded both externally and internally by non-vascular membranes. The external layer, similar to the lamina fusca of the sclerotic (from which it is separated by the perichoroidal lymph space) is known as the *suprachoroidal membrane* or *lamina suprachoroidea* (see note ⁴⁷⁸ above). The internal layer, adjacent to the pigmentary layer of the retina, structureless and transparent, is generally known in England as the *membrane of Bruch*; but sometimes, from its glassy appearance, as the *lamina vitrea* (in German, *Glashaut*); in the official German nomenclature it is termed the *lamina basalis*. Between the suprachoroidal mem-

brane and the membrane of Bruch is the richly vascular *choroid proper*, which itself consists of two strata—an *outer*, containing the larger bloodvessels, and an *inner*, containing the capillary ramifications. The outer, taking its name from the large venous plexuses in its substance, is known as the *vascular layer* or *lamina vasculosa*. The inner, capillary layer is generally spoken of both in England and Germany by the Latin name of *lamina* (or *tunica*) *choriocapillaris*, but is also known as the *tunica Ruyschiana*. Between the vascular layer and the choriocapillaris is an intermediate layer of connective tissue rich in elastic fibres and containing hardly any pigment; this layer, unimportant in man, is the tissue which in some mammals is so developed as to produce the appearance known as the *tapetum*.

⁴⁸⁷ *Annuli Iridis, Minor et Major, and the Crypts and Contraction-Folds of the Iris* (Figs. 1346 to 1348, p. 896).—"In the anterior surface of the iris a peculiar moulding is to be distinguished, partly dependent on the arrangement of its bloodvessels. First of all, we note at a distance of about 1 millimetre ($\frac{1}{4}$ inch) from the pupillary margin of the iris, and parallel therewith, a somewhat sinuous little ridge, by which the iris is divided into two zones, the smaller of which, adjoining the pupil, is known as the *pupillary zone*, *annulus iridis minor*, while the larger, peripherally situate and extending outwards to the ciliary margin of the iris, is known as the *ciliary zone*, *annulus iridis major*. In the pupillary zone the anterior surface of the iris is beset with a number of small depressions (*crypts*), which are surrounded by delicate arborescent elevations. The ciliary zone is often somewhat lighter in tint, and displays on its anterior surface a series of from three to five furrows, concentrically surrounding the pupil, and between these furrows is a corresponding number of blunted tumuli (*contraction-folds*). In its peripheral marginal region the anterior surface of the iris is beset with numerous depressions, usually somewhat darkly coloured. Along the ciliary margin the superficial layers of the stroma of the iris are more loosely woven than elsewhere, so that delicate trabeculae are formed, connecting the edge of the iris with the rather ragged edge of the posterior elastic lamina of the cornea. The circle of these trabeculae, in the angle between the cornea and the iris, constitutes the so-called *ligamentum pectinatum iridis*, which itself forms the inner wall of the canal of Schlemm" (Von Langer and Toldt, *op. cit.*, pp. 760, 761). The vascular rings within the substance of the iris, *circulus minor* and *circulus major*, are described by Quain, but the division of the iris into an *annulus minor* or *pupillary zone* and *annulus major* or *ciliary zone*, dependent on these vascular arrangements, is not mentioned by the English author, nor does he describe the *crypts* and the *contraction-folds* of the iris. The last-named, however, are alluded to by Macalister.

⁴⁸⁸ *Pigmentary Layer of the Iris* (Figs. 1346, 1348, 1349, p. 896).—This term is a literal translation of the *stratum pigmenti iridis* of the official German nomenclature. The pigmentary layer of the iris is also variously known, according to the point of view, as the *pars retinalis iridis*, *pars iridica retinae*, and *uveal pigment of the iris*. Regarding the *free border of the pigmentary layer* (see Fig. 1346), Quain writes (*op. cit.*, vol. iii., part iii., p. 31), "The pigmentary layer . . . ends abruptly at the margin of the pupil," but Macalister remarks (*op. cit.*, p. 671), "The pigment usually extends into the pupillary zone, defining its border."

⁴⁸⁹ *Venules Maculares, Superior et Inferior* (Fig. 1355, p. 898).—The little veins running horizontally outwards from the optic papilla to the yellow spot are thus named by Toldt. Quain does not use the term *macular venules*, saying merely, "The macula is also supplied by small vessels which pass directly to it from the papilla" (*op. cit.*, vol. iii., part iii., p. 55). The *arteriae maculares*,

superior and *inferior*, are, however, mentioned by name by Macalister.

⁴⁹⁰ *Two Principal Groups of the Layers of the Retina* (Fig. 1356, p. 899).—The layers of the retina are divided by Toldt into two principal groups—an inner, which he calls the *Gehirnschichte*, and an outer, the *Nervenepithelschichte*. Macalister, who recognises this grouping, speaks of these primary layers as *nerve elements* (or *layers*) and *neuro-epithelial elements* (or *layers*); but the German *Gehirnschichte* must be literally rendered *brain layers* (These terms are not used by Quain.) The layers making up these two groups are enumerated in the text of Fig. 1356.

⁴⁹¹ *Rod Cell and Cone Cell* (Ibid.).—These terms are translations of the German words *Stäbchenszelle* and *Zapfenszelle*, used in the original German edition of this work. They denote what Quain calls *rod element* and *cone element*, respectively, but the terms used in the text are more clearly expressive of the views of Toldt, as embodied in the following passage (Von Langer and Toldt, *op. cit.*, p. 767): "The granules (*Körner*) of the outer nuclear layer combine with the rods (*Stäbchen*) and cones (*Zapfen*) to form the neuro-epithelium (*Sinnesepithel*) which lies outside the brain layer of the retina." The *rods* and *cones*, and their connexion with the granules of the outer nuclear layer, are then described, and the author proceeds: "The external granules are, in truth, nothing more than the nuclei of long-drawn-out cells, whose peripheral processes form the rods and cones. These cells are a particular kind of sensory cells, known as visual cells (*Sehzellen*), which unite to form the sensory epithelium (neuro-epithelium) of the retina. A visual cell, therefore, is a greatly elongated cell, the nucleus of which (outer granule) lies in the extended middle portion of the cell, whose peripheral end bears a rod or a cone, and whose central end terminates in an arborescence in the outer molecular layer." These views should be compared with those of Quain, *op. cit.*, vol. iii., part iii., p. 46 (small print at top of page) and pp. 56 and 57 (section on the "Interconnexion of the Retinal Elements"). With Fig. 1356 Quain's Figs. 52 and 65 (*op. cit.*, *tom. cit.*) should also be compared.

⁴⁹² *Tarsi* (Fig. 1367, p. 902).—Macalister speaks of "these as the *tarsal bodies*. They were formerly often called the *tarsal cartilages*, but this was a misnomer, as they consist purely of fibrous tissue, without any intermixture of cartilage cells.

⁴⁹³ **Annulus Conjunctivae* (Fig. 1368, p. 902).—"We distinguish the *palpebral conjunctiva*, *conjunctiva palpebrarum*, from the *ocular conjunctiva*, *conjunctiva bulbi*; the latter extends forwards to the corneal margin, where it is intimately connected with the anterior border of the sclerotic; this adherent and somewhat thin portion of the ocular conjunctiva is known as the *annulus conjunctivae*. Immediately within the annulus the conjunctival epithelium is continued, without any definite boundary, into the corneal epithelium" (Von Langer and Toldt, *op. cit.*, p. 781). The term **annulus conjunctivae* is not used by Quain.

⁴⁹⁴ *Bursa Trochlearis* (Fig. 1370, p. 903).—According to Quain (*op. cit.*, vol. ii., part ii., p. 290), "the pulley is lined by a synovial sheath"; but Macalister writes (*op. cit.*, p. 653), "The tendon is here [*i.e.*, within the pulley] invested by a very lax laminated areolar tissue with an imperfect endothelial lining in its clefts, but there is scarcely ever a true synovial membrane lining the trochlea."

⁴⁹⁵ *Fascial Sheaths of the Muscles of the Eyeball* (Ibid.).—"All the muscles of the eyeball are covered, as well on their bulbar as on their orbital surfaces, by fascial investments, *fascia musculares*. In the posterior part of the orbit these are thin and delicate, but they become much thicker and stronger as the

muscles approach the globe. Here they are on the one hand connected with Tenon's capsule (*fascia bulbi*), and on the other are connected by firm fibrous slips (*Fascienszipfel*) with the margin of the orbit, and more especially to the trochlea. In this manner a fixed relation is maintained between the globe and the walls of the orbit. At their thinned anterior extremities the fascial sheaths of the muscles radiate along the fornix conjunctivæ, where they become interwoven with the conjunctival submucous areolar tissue" (Von Langer and Toldt, *op. cit.*, p. 775). These fascial sheaths are usually regarded as being derived from the posterior (orbital or outer) layer of the capsule of Tenon as the muscles perforate that layer on their way to the eyeball, and are generally described in connexion with the description of Tenon's capsule. See Quain, *op. cit.*, vol. ii., part ii., p. 292; and Macalister, *op. cit.*, p. 652. Further, in vol. iii., part iii., pp. 11, 12, Quain writes: "The capsule of Tenon is strengthened just behind the places where the recti muscles perforate it by bands of fibrous tissue, and it is attached on either side to the malar and lachrymal bones by elastic ligamentous structures which also receive fibrous slips from the external and internal recti. These structures serve as check ligaments to these muscles. They are stated by Sappey to contain plain muscular fibres. Fibrous slips also pass from the sheaths of the superior and inferior rectus, and are attached to the conjunctiva palpebrarum and to the connective tissue of the eyelid." Thus, the structures to which Toldt gives the name of *Fascienszipfel* may be called in English *fibrous slips of the fascial sheaths of the respective muscles*, or, more concisely, *check ligaments*.

⁴⁹⁶ *Sulci in the Neighbourhood of the Eye* (Figs. 1380, 1381, p. 908).—"That portion of the eyelid through which the tarsus or tarsal body [see note ⁴⁹² above] extends is usually distinguished as the *tarsal portion* (*pars tarsalis*); that portion of the eyelid which lies nearer to the orbital margin (upper or lower, as the case may be), whose groundwork is formed merely by the thin palpebral fascia (septum orbitale), is distinguished as the *orbital portion* (*pars orbitalis*). The former portion, on account of its firm consistency, always remains smooth; whilst the latter portion, when the eye is open, falls into a fold, which disappears when the eye is closed; the boundary between the two portions of the eyelid is, however, indicated by a permanent furrow in the skin, the *sulcus orbitopalpebralis*" (Von Langer and Toldt, *op. cit.*, p. 779). These **orbitopalpebral sulci* are mentioned neither by Quain nor by Macalister. Quain writes (*op. cit.*, Appendix, p. 14): "When the eye is open the skin is drawn into the deep *superior palpebral sulcus* immediately above the upper lid, and forms a loose projecting fold between this furrow and the eyebrow. The corresponding *inferior palpebral sulcus* of the lower lid is much slighter and often broken up; it is most distinct when the eye is directed downwards." Quain's *superior* and *inferior palpebral sulci* must not be identified with the *orbitopalpebral sulci* of Toldt, the latter being merely the slight cutaneous grooves corresponding respectively to the upper margin of the upper tarsal body and the lower margin of the lower tarsal body. Quain proceeds (*op. cit.*, *loc. cit.*): "Another shallow groove, the *palpebromalar sulcus*, runs round from near the inner canthus of the eye, following fairly closely the lower margin of the orbit. A small *external palpebral sulcus* is continued outwards from the outer canthus for about 3 millimetres, and forms a prolongation of the palpebral cleft when the eye is closed." Macalister writes (*op. cit.*, p. 521): "Near the lower border of the upper lid is a *superior marginal sulcus* parallel to the free border." This is not indicated in Toldt's figures. "The lower lid," writes Macalister (*op. cit.*, p. 522), "is in some

eyes marked by an *inframarginal fold* [*? furrow*]. It is usually marked off from the infra-orbital region by an *infrapalpebral sulcus*; but this is inconstant, as the motion of the lower lid in opening the eye is slight. . . . Below the infrapalpebral sulcus is a variable *palpebromalar sulcus* which deepens and often becomes a characteristic marking in old age, or in wasting diseases, which gives to the eye the appearance described as *hollow*." The *infrapalpebral sulcus* of Macalister is identical with the *inferior palpebral sulcus* of Quain; Toldt calls it *sulcus infrapalpebralis*, and shows it in Figs. 1380, 1381, p. 908.

⁴⁹⁷ *Rictus Oculi or Rima Palpebrarum* (Fig. 1380, p. 908).—The term *rictus oculi* is used by Macalister to denote the cleft between the lids, through which, when the eye is open, the front of the globe is visible. In the official German nomenclature this cleft is called *rima palpebrarum*. Neither term is to be found in Quain's "Anatomy," though both are current in England. Quain speaks of the *palpebral cleft*.

⁴⁹⁸ *Commissures of the Eyelids* (Figs. 1380 to 1382, p. 908).—Neither Quain nor Macalister makes use of the term *commissure* in this connexion. The fact is that the term *canthus*, which I have employed to represent in the English nomenclature the *angulus oculi* of the official German nomenclature, has really a somewhat wider significance than the latter, and includes that of *commissura palpebrarum*. Thus, English ophthalmic surgeons speak of "dividing the outer canthus to relieve tension"; and in that case, obviously, the *commissura palpebrarum lateralis* of the Germans is denoted. The term *canthus*, indeed, which originally signified the tire of a wheel, is somewhat misapplied when used, as it habitually is in England, to denote the angles of the palpebral cleft.

⁴⁹⁹ **Intermarginal Sulcus* (Fig. 1382, p. 908).—This term is not found in Von Langer and Toldt's "Anatomy," but is evidently applied here to the flattened, rather than grooved, free margin of the lid, between the outer limbus and the inner. See also note ⁵⁰² below.

⁵⁰⁰ *Pinguecula* (Ibid.).—"A yellowish spot, looking like adipose tissue, in the conjunctiva, close to the inner or outer edge of the cornea, consists of thickened conjunctiva and subconjunctival tissue, and contains no fat. It is commonest in old people and in those whose eyes are exposed to local irritants. Though of no consequence, advice is often asked about it" (Nettleship, "Diseases of the Eye," 6th ed., p. 281).

⁵⁰¹ *Riolan's Muscle* (Fig. 1383, p. 909).—"The *deep part* of the *palpebral portion* of the *orbicularis palpebrarum muscle*, known as the *pars lachrymalis* or *Horner's muscle* . . . springs from the lachrymal crest and from the process of the internal tarsal or palpebral ligament which is attached to that crest. . . . In the lid itself this *deep portion* lies behind the follicles of the eyelashes. . . . to this marginal portion of the muscle the name of *musculus ciliaris Riolani* or *musculus subtarsalis* is also given" (Von Langer and Toldt, *op. cit.*, p. 780). Quain writes (*op. cit.*, vol. iii., part iii., p. 2): "A marginal fasciculus (of the orbicularis muscle) lies within the line of the eyelashes, separated by the bulbs of the lashes from the other fibres, and constituting the *ciliary bundle* or *muscle of Riolan*." The fibres of the *tensor tarsi* or *muscle of Horner*, passing outwards behind the lachrymal sac from the origin above given, are, according to Quain's description, inserted into the ciliary bundles. The name *subtarsal muscle* is used by Macalister.

⁵⁰² **Rivus Lachrymalis* (Ibid.).—This term is used neither by Quain nor by Macalister, nor is any definition of it to be found in Von Langer and Toldt's "Anatomy." In the original German edition of this work the alternative name of *Thränenbach, lachrymal*

channel, is given. It denotes, I presume, the channel for the lachrymal secretion which, when the lids are closed, is formed by the apposition of the upper and lower *intermarginal sulci. See note ⁴⁹⁹ above.

⁵⁰³ *Lanugo* (Fig. 1386, p. 910).—The use of this term is in England usually restricted to denote the downy crop of hairs with which an infant is covered at birth, but which are all shed within a few months thereafter. In Germany, on the other hand, *Wollhaare* or *Lanugo* denotes the rudimentary hairy covering of the body throughout life, as distinguished from the specialized and fully developed hairs of the head, beard, axillæ, etc. There is no term current in England to distinguish this rudimentary hairy covering.

⁵⁰⁴ *Superior Palpebral Muscle, or Musculus Tarsalis* (Ibid.).—"Just beneath the conjunctiva, both in the upper and in the lower lid, there is a layer of smooth muscle fibres which are attached by means of thin elastic tendons to the margins of the tarsal bodies, and probably serve to keep the eye open. They are known as *musculus tarsalis superior* and *musculus tarsalis inferior*" (Von Langer and Toldt, *op. cit.*, pp. 780, 781). To the upper of these Macalister gives the name of *superior palpebral muscle*. Quain describes them, stating that the upper arises from the under surface of the aponeurotic expansion of the levator palpebræ superioris, the lower from the neighbourhood of the inferior oblique muscles, but he leaves the structures unnamed. They are among the fibres denoted by the name of *Müller's muscle*, a term liable to lead to confusion. See note ⁴⁹¹ above.

⁵⁰⁵ *Lachrymal Gland* (Figs. 1388, 1389, p. 911).—The *lachrymal gland* was till recently described, and is by many anatomists still described, as a single gland. The fore part of the gland, however, is separated from the rest by a thin fascial layer; it lies immediately beneath the conjunctiva, being in contact with the outer part of the superior fornix; to this part the name of *inferior lachrymal gland* is sometimes given, the remaining and larger portion being then known as the *superior lachrymal gland*. The *inferior lachrymal gland* is also known as the *palpebral portion of the lachrymal gland*, and as the *accessory lachrymal gland* (of Rosenmüller).

⁵⁰⁶ *Common Orifice of the Lachrymal Canaliculi* (Fig. 1392, p. 913).—"The canals either unite near their ends, or they open separately, but close together, into a diverticulum of the nasal sac which is known as the *sinus of Maier*" (Quain, *op. cit.*, vol. iii., part iii., p. 9). "The two [canaliculi] unite internal to the caruncula to form usually a very short tube or small sac, the *vestibulum*, which opens internally into the lachrymal sac, of which, indeed, it is only a lateral pouch" (Macalister, *op. cit.*, p. 645).

⁵⁰⁷ *Choroidal Fissure*.—The term *coloboma*, used by Toldt to denote the *choroidal fissure* (the cleft through which, in the developing eye, the mesoblast passes into the space between the lens invagination and the pigment layer of the optic cup), is in England usually employed to denote a congenital cleft in the iris, or choroid, or both, due to imperfect closure of the choroidal fissure.

⁵⁰⁸ *Subdivisions of the Concha* (Figs. 1406, 1408, p. 920).—The anterior part of the helix descends towards the external auditory meatus, but, before reaching it, curves backwards across the cavity known as the *concha*, which is thus divided by the *crus of the helix* into two parts—an upper, **cymba concha*, and a lower, **cavum concha*. These terms are not used by Quain or Macalister.

⁵⁰⁹ *Fossa of the Antihelix* (Figs. 1406, 1407, p. 920).—In England this name is usually applied to a depression on the outer surface of the auricle (see Fig. 1406). In Germany, however, this

depression is known as the *fossa triangularis*, while by the *fossa anthelialis* is meant the depression on the inner surface of the auricle, below the *eminentia scaphæ* (see Fig. 1407).

⁵¹⁰ *Auricularis Anterior or Attrahens Auriculam Muscle* (Figs. 1412, 1413, p. 921).—It is usually stated that the superficial temporal vessels and nerve lie *beneath* this muscle. Von Langer and Toldt, however, describe the muscle as consisting of two layers, a *superficial* and a *deep*; and, according to Quain (*op. cit.*, vol. ii., part ii., p. 281), "Cruveilhier describes as normal a deep anterior auricular muscle, passing from the zygomatic process to the outer surface of the tragus." As Fig. 1412 shows, the superficial temporal vessels and nerves are *superficial* to this deep layer of the muscle.

⁵¹¹ **Cupular Portion of the Epitympanic Recess* (Fig. 1414, p. 922).—In the original German edition of this work this region of the tympanum is named *Gipfelbucht*—the word signifies literally "recess of the summit"—a term not to be found in Von Langer and Toldt's "Anatomy," nor even in the "German-English Dictionary of Medical Terms" by Treves and Lang. In the former work, however, the following passage occurs on pp. 788, 789: "At the boundary between its upper and outer walls the epitympanic recess deepens to form a hemispherical fossa, which is known as the *pars cupularis recessus epitympanici*"; and on p. 805, "The head of the hammer-bone is attached by means of the superior ligament of the malleus to the cupular portion of the epitympanic recess." Bearing these facts in mind, an examination of Fig. 1423, p. 925, in which the term *Gipfelbucht* is again used, will render it evident that the latter must be identified with the *cupular portion of the epitympanic recess*. The term *epitympanic recess* or *aditus ad antrum* is used by Quain, but this author does not speak of the **cupular portion* of the recess. Fig. 1423 shows well the manner in which the recess, in Quain's words, "overhangs the inner end of the external auditory meatus." Why the term *Gipfelbucht* is used in this volume, in contradistinction to the Latin term *pars cupularis recessus epitympanici* in Part I. of this Atlas (see Fig. 132, p. 64) and in Von Langer and Toldt's "Anatomy," is not apparent.

⁵¹² (Figs. 1420, 1422, p. 924.) Toldt distinguishes between the *pars tensa* and the *pars flaccida membrana tympani*. The latter is usually known in England as the *membrana flaccida*. The term *pars tensa membrana tympani* is not used by Quain or Macalister; I have rendered it literally *tense portion of the tympanic membrane*.

⁵¹³ **Malleolar Prominence and *Stria Malleolaris* (Fig. 1420, p. 924).—"Near the upper margin of the *membrana tympani* we see also a small prominence, *prominentia malleolaris*, caused by the short process (*processus brevis vel obtusus*) of the malleus" (Von Langer and Toldt, *op. cit.*, p. 803). This term is not used by Quain or Macalister; nor does either of these authors employ the term *stria malleolaris* to denote the handle of the malleus seen through the *membrana tympani*.

⁵¹⁴ **Anterior and Posterior Malleolar Folds* (Fig. 1421, p. 924).—"The auditory ossicles are imbedded in mesentery-like folds of the mucous membrane, which, as they have free projecting borders, give rise to pouches or recesses. One of these folds is attached in front and behind to the margin of the *membrana tympani*, contains between its layers the root of the long process of the malleus and the chorda tympani nerve, and extends, running parallel to the *membrana tympani*, on to the upper portion of the handle of the malleus, which divides it into a larger anterior and a smaller posterior portion; we speak, therefore, of its two parts as the *plica malleolaris anterior* and the *plica malleolaris posterior*. These folds, with the tympanic

membrane, bound two pouches, each of which has a slit-shaped, downwardly directed orifice; they are known as the *recessus membrana tympani, anterior et posterior*" (Von Langer and Toldt, *op. cit.*, p. 806). This fold is described by Quain (*op. cit.*, vol. iii., part iii., p. 96) as forming the inner boundary of the *anterior and posterior pouches of the tympanum*; but the names **anterior* and **posterior malleolar folds* are not used by this author. They must not be confused with the *tympanomalleolar folds* shown in Figs. 1420 and 1422.

⁵¹⁵ **Fold of the Incus* (Fig. 1423, p. 925).—"A second, likewise vertically disposed, fold of the tympanic mucous membrane, the *plica incudis*, is attached to the posterior wall of the tympanum, and forms the covering of the incus, from the long process of which it descends. A third, horizontal fold, the *plica stapedis*, runs from the pyramid or eminentia papillaris along the tendon of the stapedius muscle, and covers not only the crura, but also the obturator membrane of the stapes" (Von Langer and Toldt, *op. cit.*, p. 806: this quotation is a continuation of that in note ⁵¹⁴ above). The terms **fold of the incus* and **fold of the stapes* are used neither by Quain nor by Macalister. The former is shown in Fig. 1423, p. 925, and in Figs. 1429 and 1431, p. 926; but the latter is not indicated by name in this Atlas.

⁵¹⁶ *Processus Orbicularis seu Lenticularis* (Figs. 1423, 1425, 1427, p. 925).—"This tubercle, which articulates with the head of the stapes, was formerly, under the name of *os orbiculare seu lenticulare*, described as a separate bone, which, indeed, it originally is in the foetus up to the sixth month" (Quain, *op. cit.*, vol. iii., part iii., pp. 90, 91). The old name of *os lenticulare* is used by Macalister. In the official German nomenclature the process is termed *processus lenticularis*.

⁵¹⁷ (Fig. 1423, p. 925.) The term *membrana propria*, used by Macalister to denote the *central fibrous layer* of the *membrana tympani*, is more appropriate than the term *tunica propria*, used by Quain, since *tunica* properly means a *covering*, and this is the central portion of the membrane, itself covered by an outer cutaneous and an inner mucous tunic.

⁵¹⁸ *Crura of the Stapes* (Fig. 1426, p. 925).—The *anterior crus* of the stapes is the straighter of the two, and is therefore named by Macalister *crus rectilineum*; the *posterior*, more curved of the two crura being by this author named *crus curvilineum*. The crura diverge from a constricted part, close to the head, known in England as the *neck* of the bone; the crura and the neck combine to form what is sometimes named the *arch* of the stapes. Neither of these latter terms is represented in the nomenclature used by Toldt.

⁵¹⁹ *Obturator Membrane of the Stapes* (Ibid.).—This membrane is described by Quain, but the name *obturator membrane* is not used by this author. Macalister speaks of it in one place as the *obturator membrane*, and in another as the *membrana obturatoria*.

⁵²⁰ *Posterior Ligament of the Incus* (Fig. 1429, p. 926).—This being the only ligament of any importance attached to the incus, Quain calls it the *ligament of the incus* without qualification. Macalister uses the Latin name, *ligamentum incudis posterius*.

⁵²¹ *Petrosphenoidal Suture* (Ibid.).—In the first (osteological) section of this work the articulation between the anterior border of the petrous bone and the great wing of the sphenoid bone is called by Toldt *fissura sphenopetrosa*, a term which in Fig. 104, p. 48, I have translated *petrosphenoidal fissure*, and in Fig. 105, p. 49, *petrosphenoidal suture*. In the former case, seen from below, it has rather the appearance of a *fissure*; in the latter, seen from above, of a *suture*. The latter also is the aspect presented in Fig. 1429, p. 926. It is, in fact, only over a small area that the apposed surfaces of the two bones are in actual contact so as to

form a *suture*; elsewhere these surfaces, and this for the greater part of their extent, form the sides of a *fissure*. *Petrosphenoidal fissure* is the name given to the articulation by Quain.

⁵²² *Roof of the Tympanum and Tegmen Tympani* (Ibid.).—Macalister uses these terms as interchangeable; according to Quain, however, the thin plate of bone known as *tegmen tympani* "also roofs over the canal of the Eustachian tube and the tensor tympani muscle" (Quain, *op. cit.*, vol. iii., part iii., p. 81). Thus, the *roof of the tympanum* forms a part only of the *tegmen tympani*. The former is distinguished by Toldt as the *paries tegmentalis cavi tympani* (cf. Fig. 133, p. 65, in Part I. of this Atlas).

⁵²³ *Secondary Tympanic Membrane* (Fig. 1431, p. 926).—Quain calls this structure the *secondary membrane of the tympanum*. The form used in the text seems preferable; and it is, moreover, a literal translation of the term *membrana tympani secundaria*, used in the official German nomenclature. Better than any of these, because more precise, is, in my opinion, the name used by Foster and some other authorities, *membrane of the fenestra rotunda*. This harmonizes, moreover, with the alternative name of the *annular ligament of the base of the stapes* (see note ⁷, p. 926).

⁵²⁴ *Cochleariform Process* (Fig. 1432, p. 927).—It should be noted that Quain designates by this term the entire **septum of the musculotubal canal* (see note ⁵²⁶ below), which separates the osseous portion of the Eustachian tube from the canal for the tensor tympani muscle. By Toldt this septum is named *septum canalis musculotubarii*; while by the term *processus cochleariformis* the German author denotes merely the expanded and everted end of the septum, which projects into the tympanic cavity and separates the fenestra ovalis from the tympanic orifice of the Eustachian tube. The tendon of the tensor tympani muscle bends at nearly a right angle over the cochleariform process as over a pulley. Toldt's usage of the term *processus cochleariformis* is preferable to Quain's, and is, indeed, that of many English anatomists (see also Fig. 135, p. 66, in Part I.).

⁵²⁵ *Groove of the Promontory* (Ibid.).—According to Quain, "the surface of the promontory is marked by grooves, in which lie the nerves of the tympanic plexus" (*op. cit.*, vol. iii., part iii., p. 83). Toldt, on the other hand, speaks of a single, vertical groove, *sulcus promontorii*, "a continuation of the tympanic canaliculus; in this groove the tympanic nerve (nerve of Jacobson) and the small superficial petrosal nerve meet and unite" (Von Langer and Toldt, *op. cit.*, p. 788). In Fig. 138, p. 67, Part I. of this Atlas, however, the surface of the promontory exhibits several grooves, as described by Quain.

⁵²⁶ (Fig. 1435, p. 928.) The *Eustachian cartilage* is bent in such a manner that it forms the roof, the greater part of the inner wall, and a small part of the outer wall of the cartilaginous portion of the Eustachian tube. The portion forming the inner wall is named by Toldt *lamina medialis* (**inner plate*), that forming the upper part of the outer wall *lamina lateralis* (**outer plate*), of the Eustachian cartilage. Where the cartilage is lacking, the wall of the cartilaginous portion of the tube is strengthened by a strong but flexible fibrous membrane, named by Toldt *lamina membranacea tubæ auditivæ*. By Quain this membrane is called *fascia salpingopharyngea*, a name used on the Continent in a different signification (see note ¹ to p. 436, in Part IV.), and therefore better avoided in this connexion. I have called it simply the *membranous portion of the Eustachian tube*. The parts just described are best seen in a transverse section of the Eustachian tube, as in Figs. 1437, 1438, and 1439, p. 929.

⁵²⁷ *Levator Cushion* (Ibid.).—"When the levatores palati are contracted, the upper surface of the soft palate presents a convex

eminence behind each posterior naris, called the *levator cushion*. This is occasionally seen in the dead body" (Quain, *op. cit.*, vol. iii., part iv., p. 57).

⁵²⁸ **Musculotubal Canal* (Fig. 1436, p. 929).—The name **canalis musculotubarius* is used by the author as a common name for the canal for the tensor tympani muscle and the osseous canal for the Eustachian tube (which canals are therefore called by him *semicanals*, viz., *semicanalis muscoli tensoris tympani* and *semicanalis tube auditivæ*, respectively), which are separated one from the other more or less completely by the **septum of the musculotubal canal* (**septum canalis musculotubarii*) or *cochleariform process*. The latter name, however, is better confined to the expanded and everted end of the septum which projects freely into the tympanic cavity. See note ⁵²⁴ above.

⁵²⁹ *Crura of the Semicircular Canals* (Fig. 1442, p. 930).—In the German official nomenclature that half or limb of each semicircular canal whose extremity dilates into an ampulla is termed the *ampullary crus* (*crus ampullare*), whilst the other half or limb of the canal is termed the *simple crus* (*crus simplex*). Further, the non-ampullary or undilated extremities of the superior and posterior semicircular canals unite before opening into the vestibule to form what is termed the *common crus* (*crus commune*). (See Von Langer and Toldt, *op. cit.*, p. 792.) These terms are sometimes used in England also.

⁵³⁰ *Whorls of the Cochlea* (Figs. 1440, 1441, p. 930).—The term *whorl* is employed by Macalister and by Foster, and is probably that most generally used in speaking of the convolutions of the cochlea; by Quain, however, the terms *coil* and *turn* are employed indifferently.

⁵³¹ *Macula Cribrosa Superior* (Fig. 1442, p. 930).—This term is used by Macalister, but not by Quain. It denotes the cribriform area at the upper end of the crest of the vestibule, the oramina of which correspond with those of the *area cribrosa superior* (*area vestibularis superior*, according to Toldt) of the fundus of the internal auditory meatus or reniform fossa (see Fig. 140, p. 68, in Part I. of this Atlas), and transmit the filaments of the superior division of the auditory nerve, or vestibular nerve, which supplies the utricle and the ampullæ of the superior and external semicircular canals.

⁵³² *Macula Cribrosa Media* (Ibid.).—This term is used by Macalister, but not by Quain. It denotes the cribriform area in the lower part of the fovea hemispherica, the foramina of which correspond with those of the *area cribrosa media* (*area vestibularis inferior*, according to Toldt) of the fundus of the internal auditory meatus or reniform fossa (see Fig. 140, p. 68, in Part I. of this Atlas), and transmit the filaments of the nerve to the sacculæ.

⁵³³ *Macula Cribrosa Inferior* (Ibid.).—This term is used by Macalister, but not by Quain. The smallest of the three cribriform areas of the vestibule, it is situate close to the ampullary orifice of the posterior semicircular canal. Its foramina lead to the *foramen singulare* of the fundus of the internal auditory meatus or reniform fossa (see Fig. 140, p. 68, in Part I. of this Atlas), and transmit the filaments of the posterior ampullary nerve.

⁵³⁴ **Area of the Cochlea* (Fig. 1448, p. 932).—"Much the greater part of the lower division [*inferior fossa*, Quain] of the fundus of the internal auditory meatus [*i.e.*, of the region below the *transverse crest* or *crista falciformis*] is occupied by the *area cochlea*; this depressed area corresponds to the base of the cochlea, and is occupied by the *tractus spiralis foraminosus*" (Von Langer and Toldt, *op. cit.*, p. 795). "In the inferior fossa are seen (1) the *area cribrosa media* . . . ; (2) the *foramen singulare* . . . ; and (3)

the *tractus spiralis foraminulentus*, for the cochlear division of the auditory nerve, a series of minute holes beginning below the *area cribrosa media*, forming one turn and a half in a depression corresponding to the base of the cochlea, and ending at the *foramen centrale cochlea*, the orifice of the central canal of the modiolus" (Quain, *op. cit.*, vol. ii., part i., p. 43). Quain appears to use the term *tractus spiralis foraminulentus* in a double sense, but it seems better to limit its signification to the spirally arranged series of foramina, and to adopt the name *area of the cochlea* for the whole area corresponding to the base of the cochlea. See also Fig. 140, p. 68, in Part I.

⁵³⁵ *Spiral Septum separating the Whorls of the Cochlea* (Fig. 1452, p. 934).—By a strange oversight the *complete* osseous septum between the whorls of the cochlea, upon which the separation of the cavity of that organ into a coiled tube depends, has been left unnamed by Quain and also by Macalister. Nor is there any term for it in the official Latin nomenclature of the German Anatomical Society. Toldt calls it the *Zwischenwand* (*partition-wall*), a name which is insufficiently distinctive. The name used in the text of Figs. 1451 and 1452, p. 934, *spiral septum separating the whorls of the cochlea*, is cumbersome; but to speak of it as the *spiral septum* alone might lead to confusion with the *incomplete* septum known as the *osseous spiral lamina*.

⁵³⁶ *Spiral Osseous Canal of the Cochlea* (Fig. 1451, p. 934).—The term *spiral osseous canal* is used by Quain to denote the cavity of the cochlea when the membranes have been removed. To speak simply of the *spiral canal of the cochlea* (a literal translation of the term *canalis spiralis cochlea* used by Toldt) might lead to confusion with the *spiral canal* of the intact cochlea situate between the *scala vestibuli* and the *scala tympani*. This canal was formerly known as the *scala media*, but is now usually termed the *canal of the cochlea* or *canalis cochlea*; it is also known as the *canalis membranaceus cochlea*, and as the *ductus cochlearis*. This last name, *ductus cochlearis*, being the one always used in Germany to denote the *cochlear canal* of English authors, no confusion is liable to arise in that country with the *canalis spiralis cochlea*.

⁵³⁷ **Lamina Modioli* (Figs. 1451, 1452, p. 934).—This term is not used by Quain or Macalister, and I therefore quote the following definition from Von Langer and Toldt (*op. cit.*, p. 793): "An independent axis exists within the windings of the cochlea just as little as within those of a snail-shell. If, however, we break into the spiral tube of a snail-shell from without, we find that those parts of the wall of the tube adjacent to the geometrical axis of the coil combine to form an apparent columnar axis. It is the pseud-axis of the cochlea formed in this manner that is known as the *modiolus*. In the two complete whorls the circumference of this axis is likewise complete, so that it forms a small hollow column, with an aperture in the centre of the base of the cochlea; in the apical whorl, however, which is a half-turn merely, the circumference of the axis is incomplete, and has the form of a ledge projecting from the wall, which ascends perpendicularly [see note ⁵⁴⁰ below] to the cupola, and is known as the **lamina modioli*."

⁵³⁸ **Area of the Facial Nerve* (Fig. 1453, p. 934).—In note ⁵³⁴ above, dealing with the terminology of the parts of the fundus of the internal auditory meatus or reniform fossa, the division of this region into a smaller *superior fossa* and a larger *inferior fossa* by means of a horizontal ridge known as the *transverse crest* or *crista falciformis* was described. In the bottom of the superior fossa is the *area cribrosa superior* (*area vestibularis superior*, according to Toldt), transmitting the filaments of the superior division of the auditory nerve, or vestibular nerve; while on the anterior wall of the fossa is the orifice of the aqueduct of

Fallopian. This latter, in the German official nomenclature, is known as the *area nervi facialis*.

⁵⁰⁰ *Longitudinal Canals of the Modiolus* (Ibid.).—This term, denoting the finer canals of the axis of the cochlea—all the canals, that is to say, besides the *central canal* and the *spiral canal of the modiolus*—is not used by Quain. The structures in question are, however, described by this author in the following terms (*op. cit.*, vol. iii., part iii., pp. 102, 103): "The central part of the modiolus is spongy as far as the last half-coil, and is pierced by many small canals, for the passage of the nerves and vessels to the spiral lamina; one of these canals, larger than the rest, *central canal of the modiolus*, runs from the base through the centre of the modiolus. The base of the modiolus appears in the internal auditory meatus as the fossula cochleæ containing the foramen centrale and the tractus spiralis foraminulentus; the latter transmitting the nerve fibres of one and a half turns of the cochlear tube, the former being continued into the central canal of the modiolus and transmitting the nerve fibres for the uppermost turn." The *fossula cochleæ* thus briefly alluded to by Quain is the portion of the fundus of the internal auditory meatus or reniform fossa called by Toldt *area cochleæ* (see note ⁵⁰² above). In Fig. 114, p. 103 (*op. cit.*, tom. cit.), Quain calls it, not *fossula*, but *fovea cochleæ*. It must not be confounded with the *recessus cochlearis*, a minute depression on the inferior wall of the vestibule in which the blind basal extremity of the ductus cochlearis or canal of the cochlea is lodged (see Fig. 1442, p. 930).

⁵⁰¹ *Conventional Description of the Cochlea* (Ibid.).—In note ⁵⁰⁰ above, the *lamina modiolus* is said to ascend *perpendicularly* to the cupola of the cochlea. It can be said to do so only if the axis of the cochlea is considered as vertical, for descriptive purposes. "In the natural position," says Foster ("Physiology," 5th ed., 1891, p. 1340), "the cochlea is nearly horizontal with the beginning of the first whorl in the base abutting on the median wall of the tympanum, and with the apex directed forwards and towards the median line; but when we are dealing with it by itself it will be convenient to consider it as if it were vertical in position, with the apex above and the base below." Quain acts on the same convention in his description of the isolated cochlea (*op. cit.*, vol. iii., part iii., p. 113, footnote), and adds that parts nearer the columella (modiolus) are spoken of as *inner*, parts nearer the external wall as *outer*. In the use, indeed, of such terms as *apex* and *cupola* the assumption in question is implied.

⁵⁰² *Tractus Spiralis Foraminulentus* (Fig. 1455, p. 935).—This is the spirally arranged series of foramina, the apertures of the *longitudinal canals of the modiolus*, transmitting the filaments of the cochlear nerve to the basal and middle whorls of the cochlea; in the centre of the spiral is a larger foramen (*foramen centrale cochleæ*), the aperture of the *central canal of the modiolus*, transmitting that part of the cochlear nerve which supplies the apical half-whorl of the cochlea. Strictly speaking, the application of the term *tractus spiralis foraminulentus* should be limited to the spiral groove in which the foramina are situate; the whole of the shallow depression which the spiral groove itself occupies, corresponding as it does to the centre of the base of the cochlea—that is, to the base of the modiolus—being by Toldt named *area cochleæ*, and by Quain *fossula* or *fovea cochleæ*. (See also notes ⁵⁰⁴ and ⁵⁰⁹ above.)

⁵⁰³ *Osseous and Membranous Semicircular Canals* (Figs. 1456 to 1458, p. 936).—In the German official nomenclature the membranous semicircular canals are termed *ductus semicirculares*. This usage is at once concise, and avoids the possibility of confusion; but to speak in English of the *semicircular ducts*

would be too much of an innovation, and I have therefore introduced the word *membranous* in parentheses in all cases in which the *membranous canals* are denoted. In all cases in which the term *semicircular canal* is used in this work without that qualification, one of the *osseous canals* is indicated.

⁵⁰⁴ *Cristæ Acustica* and **Ampullary Sulci* (Fig. 1456, p. 936).—"Each of the membranous ampullæ exhibits on its outer surface a groove traversing nearly half its circumference, known as the *sulcus ampullaris*, along which bundles of the auditory nerve enter the wall of the ampulla. This groove corresponds to a sickle-shaped fold in the interior of the ampulla, the *crista ampullaris*, covered by the sensory epithelium" (Von Langer and Toldt, *op. cit.*, p. 796). Quain calls the whole projection *septum transversum*, and its most prominent part, surmounted by the auditory epithelium, the *crista acustica*, and it is this latter name which is commonly used in England to denote the *crista ampullaris* of the German official nomenclature. "Beyond each rounded end of the crista," continues Quain (*op. cit.*, vol. iii., part iii., p. 108), "is a crescent-shaped edge (covered by columnar epithelium) which has been termed *septum semilunatum*." Neither this term nor the term *septum transversum* is used by Toldt; Quain, on the other hand, does not use the term *sulcus ampullaris* or any equivalent thereof. Macalister describes the sulcus without giving it any distinctive name. He writes (*op. cit.*, p. 685): "On the saccule and on each ampulla there are thickened areas circumscribed and projecting into their cavities; each ampulla is crossed by a transverse *crista acustica*, marked externally by a slight depression. The similar spots on the inner wall of the saccule and utricle are called *macula acustica*." As the English equivalent of **sulcus ampullaris*, I use in the text a literal translation, **ampullary groove*. (See Fig. 1462, p. 938.)

⁵⁰⁵ *The Vestibular Nerve* (Figs. 1457, 1458, p. 936).—Toldt's description and nomenclature of the superior division of the auditory nerve or vestibular nerve differ somewhat from those of Quain. "The vestibular nerve consists of two branches—an *upper*, *ramus utriculo-ampullaris*, and a *lower*, *ramus sacculo-ampullaris*. The *utriculo-ampullary nerve* consists of the united *utricular nerve*, *superior ampullary nerve*, and *external ampullary nerve*; the *sacculo-ampullary nerve* consists of the united *sacculus nerve* and *posterior ampullary nerve*" (Von Langer and Toldt, *op. cit.*, pp. 788, 789). According to Quain, on the other hand, the *superior division of the auditory nerve*, or *vestibular nerve*, supplies only the *utricular nerve*, *superior ampullary nerve*, and *external ampullary nerve*—consists, that is, of the filaments that emerge from the *macula cribrosa superior* (see note ⁵⁰¹ above)—and is thus really identical with the **utriculo-ampullary branch* of Toldt. The *inferior division of the auditory nerve*, on the other hand, divides into (a) a *posterior branch* (identical with Toldt's **sacculo-ampullary branch*) which supplies the *sacculus nerve*, emerging from the *macula cribrosa media* (see note ⁵⁰³ above), and the *posterior ampullary nerve*, emerging from the *macula cribrosa inferior* (see note ⁵⁰³ above); and (b) an *anterior branch*, which is the *cochlear nerve*. Yet another classification of these branches is adopted by Macalister (*op. cit.*, p. 684), apparently based upon, and yet differing slightly from, that of Schwalbe. Quain's grouping of the branches would, however, seem to be that most in accordance with the anatomical data.

⁵⁰⁶ **Vestibular Cæcum*, and **Cupular Cæcum* or *Lagena* (Fig. 1458, p. 936).—The name of **cæcum vestibulare* is given by Toldt to the blind extremity of the canal of the cochlea at the base of that organ, **cæcum cupulare* to the blind extremity at the apex. These terms are not used by Quain, who, however, speaks of the latter as the *lagena*.

⁵⁴⁶ *Cavity of the Cochlea* (Ibid.).—The term here translated *cavity of the cochlea* is in the original German *Schneckenkanal*, a literal rendering of which as *cochlear canal* would be likely to lead to confusion. The *cavity* or *canal* here designated is the interior of the membranous cochlea considered as a whole, without regard to its interior subdivisions into *scala vestibuli*, *scala tympani*, and *ductus cochlearis*. Concerning the author's use of a similar term to denote the interior of the osseous cochlea considered as a whole, viz., the *spiral osseous canal of the cochlea*, see note ⁵⁵⁰ above.

⁵⁴⁷ *Ductus Perilymphaticus* (Fig. 1459, p. 937).—This name is not used by Quain or Macalister. According to Von Langer and Toldt (*op. cit.*, p. 798), "The canaliculus cochleæ (aqueduct of the cochlea) conveys the *ductus perilymphaticus*; this leads downwards from the scala tympani quite close to the fenestra rotunda, and at the inferior (or posterior) border of the petrous portion of the temporal bone [see Fig. 133, p. 65, in Part I.], through the external orifice of the aqueduct of the cochlea [see Fig. 128, p. 62, and Fig. 129, p. 63, in Part I.], a communication is effected between the perilymphatic space and the subdural space." According to Quain (*op. cit.*, vol. iii., part iii., p. 104), "Close to the commencement of the scala tympani is the orifice of a small canal (*aqueductus cochleæ*), which extends downwards and inwards to the lower border of the petrous bone, where it opens into a depression immediately in front of the jugular fossa. It transmits a small vein which joins the inferior petrosal sinus. There is also a communication along the aqueductus cochleæ between the subarachnoid space and the perilymph in the scala tympani." The communication is rather, as described by Quain, of the nature of a perivascular lymph space (resembling those perivascular spaces in the tunica adventitia of the bloodvessels of the brain and the spinal cord which communicate with the subarachnoid space at the surface of those organs), than a distinct duct, as described by Von Langer and Toldt. On the other hand, since the vein of the aqueduct of the cochlea joins the inferior petrosal sinus, which runs between the layers of the dura mater, the perilymphatic space in question must join the *subdural space* (as stated by Von Langer and Toldt), and not the *subarachnoid space* (as stated by Quain). The latter author's error is, however, probably a mere clerical error. Macalister says merely (*op. cit.*, p. 634): "A fine opening starts from the beginning of the floor of the scala tympani and passes down to the side of the basilar surface of the petrous bone as the aqueductus cochleæ; veins and lymphatics traverse it."

⁵⁴⁸ *Vestibular Nerve* (Fig. 1465, p. 939).—The term *nervus vestibuli* as used by Toldt is more comprehensive than the term *vestibular nerve* as used by Quain, embracing as it does, in addition to the *utricular nerve*, the *superior ampullary nerve* and the *external ampullary nerve* (which constitute the *vestibular nerve* or *superior division of the auditory nerve*, according to Quain), the *sacculus nerve* and the *posterior ampullary nerve* (which latter are regarded by Quain as constituting a distinct *posterior branch of the inferior division of the auditory nerve*). See also note ⁵⁴⁴ above, and notes ⁵ and ⁶ to p. 937.

⁵⁴⁹ *Spiral Prominence* (Fig. 1466, p. 939).—This is described by Quain, although the name *spiral prominence* is not actually employed by this author. He writes (*op. cit.*, vol. iii., part iii., p. 119): "There is usually a slight inward projection [on the outer wall of the cochlear canal] a little above the spiral ligament, containing a prominent bloodvessel." This "inward projection" is that named *prominentia spiralis* in Toldt's Fig. 1466, p. 939. The "prominent bloodvessel" is also visible in the same

figure, but is left unnamed. Quain, in his Fig. 135 (*op. cit.*, tom. cit., p. 118), names it the *vas prominens*, the name used by Toldt in Fig. 1468, p. 940.

⁵⁵⁰ *Arterial Glomerulus of the Cochlea* (Ibid.).—"The offsets of the cochlear branch [*ramus cochleæ*, one of the two terminal branches of the internal auditory artery] enter the canaliculi of the modiolus, and form loops or actual glomeruli, the *glomeruli arteriosi cochleæ*, and from these latter arise the fine terminal branches to the spiral ganglion and to the nerve expansion in the osseous spiral lamina as well as to the wall of the scala vestibuli and to Reissner's membrane" (Von Langer and Toldt, *op. cit.*, p. 799). Quain describes "a spirally arranged glomerulus-like arterial plexus" in the *outer wall of the cochlea* (*op. cit.*, vol. iii., part iii., p. 126), but makes no mention of glomeruli on the vessels in the canals of the modiolus and the osseous spiral lamina.

⁵⁵¹ *The Bloodvessels of the Labyrinth* (Figs. 1467, 1468, p. 940).—Quain's account of these vessels is not very minutely detailed, and for this reason many of the names used on this page are not to be found in Quain's "Anatomy." According to Von Langer and Toldt, whose account I here summarize (*vide op. cit.*, pp. 799, 800), the *internal auditory artery* (*arteria auditiva interna*), a branch of the *basilar artery* (*arteria basilaris*)—see Fig. 1007, p. 619, Fig. 1011, p. 622, and Fig. 1012, p. 623, in Part V.—accompanies the auditory nerve into the internal auditory meatus. After giving off a considerable *vestibular branch* (*ramus vestibularis*), which supplies the maculae acusticae of the saccule and utricle, and the ampullae of the superior and external membranous semicircular canals, the *internal auditory artery* divides into its two terminal branches. One of these, the *cochlear branch* (*ramus cochleæ*), supplies the middle and apical whorls of the cochlea; the branches of this vessel are described in note ⁵⁵⁰ above. The other terminal branch, the *vestibulocochlear branch* (*ramus vestibulocochlearis*), supplies the basal whorl of the cochlea, the saccule and the utricle, and the ampulla of the posterior membranous semicircular canal. The branches to the ampullae give off fine arterial twigs along the membranous semicircular canals. The *veins of the labyrinth*, *internal auditory veins* (*venae auditivae internae*), combine for the most part to form two trunks. One of these, the *vein of the aqueduct of the vestibule* (*vena aqueductus vestibuli*), is formed by the coalescence of capillaries from the utricle and the semicircular canals, and terminates in the superior petrosal sinus. The other, the *vein of the aqueduct of the cochlea* (*vena canaliculi cochleæ*), receives the veins of the cochlea and small *vestibular veins* (*venae vestibulares*), and terminates in the bulb of the internal jugular vein (see note ⁵⁴⁷ above, and also Appendix to Part V., note ¹²¹). The principal radicle of the cochlear veins is the *spiral vein of the modiolus* (*vena spiralis modioli*), which runs in the axial wall of the scala tympani; the venules opening into this trunk surround the wall of the scala tympani, whereas the terminal branches of the arteries surround the wall of the scala vestibuli. In the internal auditory meatus is a companion vein (sometimes wanting) to the internal auditory artery; this vessel is more particularly distinguished as the *internal auditory vein* (*vena auditiva interna*). It empties itself into the inferior petrosal sinus, and represents a collateral channel for the cochlear veins. The fine anastomoses of the vessels of the labyrinth with the vessels of the tympanum are effected by means of the bloodvessels of the petrous portion of the temporal bone.

⁵⁵² *Vas Spirale* (Fig. 1468, p. 940).—This vessel, though figured in Toldt's Atlas, is omitted by Von Langer and Toldt from their description of the vessels of the labyrinth (see note ⁵⁵¹

above). Quain, however, writes (*op. cit.*, vol. iii., part iii., p. 117): "Small bloodvessels are found in the basilar membrane, as a rule extending only over its inner part. They are usually terminated by a rather large longitudinally running vessel, situated opposite the outer rods of Corti, and known as the *vas spirale*."

⁵⁵³ *Cartilage of Jacobson* (Fig. 1471, p. 943).—In the specimen shown in Fig. 1471 this cartilage barely comes into contact with the vomer, the end of that bone being truncated, and thus the cartilage hardly seems to deserve its alternative names of *vomerine cartilage* or *cartilago vomeronasalis*. When the extremity of the vomer is pointed, however (a condition which the name of the bone implies to be normal), the point extends so far forward that a considerable part of the narrow cartilage of Jacobson lies between the vomer below and the cartilage of the septum above.

⁵⁵⁴ *Eminence of Jacobson* (Fig. 1472, p. 943).—This term is a translation of the term *Jacobson'scher Wulst* used in the original German edition of this work. Macalister (*op. cit.*, p. 635) describes a slight oblique thickening on the anterior and inferior part of the nasal septum, at the anterior extremity of which is the orifice of a blind pouch, the rudiment of the organ of Jacobson. This thickening is the *eminence of Jacobson*, to which no distinctive name is given either by Macalister or by Quain.

⁵⁵⁵ *Lateral Crest of the Septum* (Fig. 1475, p. 945).—This term is not used by Quain or Macalister. As Fig. 1475 shows, something more than the common deviation of the septum is denoted. Von Langer and Toldt write (*op. cit.*, p. 92): "Not infrequently we find on the wall of the septum of the nose, in the region of the vomer, a horizontal ridge, *crista lateralis septi*, projecting to one side or the other; or the vomer as a whole may be curved towards one side. In this manner the size of one side of the nasal cavity may be greatly restricted."

⁵⁵⁶ *Cavernous Plexus of the Turbinals* (Fig. 1476, p. 945).—This name is not actually used either by Quain or by Macalister. Quain, however, describes the veins as forming "a dense plexus in the mucous membrane, those in the deeper parts of the membrane being especially large, and closely arranged, so as almost to approach the structure of cavernous tissue. This is most largely developed over the whole lower turbinal, the lower and hinder border of the middle turbinal, and the hinder end of the upper turbinal, as well as on the lower and hinder part of the septum" (*op. cit.*, vol. iii., part iii., p. 145); while Macalister speaks of "patches of vascular tissue simulating erectile tissue" (*op. cit.*, p. 635).

⁵⁵⁷ *Meatus Supremus and Concha Suprema* (Ibid.).—"Above and behind the superior turbinal bone, the openings of the sphenoidal and sphenoidal cells form a depression, the *meatus supremus*, over which there is sometimes a small bony plate, the *concha suprema*" (Macalister, *op. cit.*, p. 231). In another place (p. 637) Macalister speaks of the meatus supremus as the *fourth meatus*. This, it will be noted, he describes as constant, the *concha suprema* only as a variety.

⁵⁵⁸ *Meckel's Space* (Fig. 1478, p. 947).—The hollow in the dried skull, close to the apex of the petrous bone, on its anterior or upper surface, in which the Gasserian ganglion lies, is known as the *fossa of the Gasserian ganglion*, or *impressio trigemini* (see Fig. 130, p. 63, in Part I.). In the fresh skull this surface is, of course, covered with dura mater. Further, the outer edge of the tentorium cerebelli being attached to the superior border of the petrous bone and also to the posterior clinoid process, between these two attachments this portion of the dura mater "bridges

over the impressio trigemini on the upper surface of the apex of the petrous bone, and thus closes in the space for the reception of the Gasserian ganglion. This space is the *cavum Meckelii*" (Von Langer and Toldt, *op. cit.*, p. 668).

⁵⁵⁹ *Epidermis* (Fig. 1484, p. 950).—The *epidermis* is also known as the *scarf-skin* or *cuticle*; but the signification of the term *cuticle* is often restricted to the *stratum corneum* and *stratum lucidum*, which are thus grouped together in contradistinction to the *rete mucosum* or *Malpighian layer*. This latter is also subdivided into three layers (distinguishable only under a higher magnification than that of Fig. 1484); in their order from without inwards, these are named *stratum granulosum*, *stratum spinosum*, and *stratum columnare*.

⁵⁶⁰ *Hair-Bulb and Hair-Knob* (Fig. 1489, p. 952).—Von Langer and Toldt distinguish between these structures in the following terms (*op. cit.*, p. 818): "Growing hairs end in a hollow bulbous enlargement, the *hair-bulb* (*bulbus pili*, *Haarzwiebel*), into the interior of which the hair-papilla projects, the substance of which is composed of closely packed and, as a rule, deeply pigmented cells. Full-grown hairs, on the contrary, terminate in a somewhat pointed *hair-knob* (*Haarkolben*), which, like the cortical substance of the shaft or stem of the hair, is entirely composed of spindle-shaped cortical cells." Quain speaks of the *bulbus pili* (*Haarzwiebel*) indifferently as *hair-bulb* and *hair-knob*, and of the *Haarkolben* as a *modified hair-bulb*. The term *hair-knob*, however, is a literal translation of *Haarkolben*.

⁵⁶¹ *Inner Root-Sheath* (Figs. 1489, 1491, p. 952).—In the middle portion of the hair-follicle the *inner root-sheath* itself consists of three distinct layers, which are left unnamed by Toldt in the original German edition of this work. As, however, they are well shown in Fig. 1491, I have indicated them in the text to that figure. These layers are: (1) An outer, fenestrated, non-nucleated layer of flattened cells, known as *Henle's layer*; (2) an intermediate layer of polygonal nucleated cells, often two or three rows deep (though consisting of a single row only in Fig. 1491), known as *Huxley's layer*; and (3) a layer of imbricated, downwardly projecting scales, interdigitating with the upwardly pointing scales of the cuticle proper of the hair, and known itself as the *cuticle of the root-sheath*. Near the mouth and also near the fundus of the follicle, Henle's layer and Huxley's layer are no longer separable, being represented by a single continuous layer of large polygonal nucleated cells. As a whole the inner root-sheath is continuous with the *stratum corneum* (see note ⁵⁵⁹ above).

⁵⁶² *Dermic Coat of the Hair-Follicle* (Ibid.).—As the epidermic coat of the follicle is continuous with and represents the epidermis of the cutaneous surface, so the dermic coat is continuous with and represents the corium. There are no concise and well-established names in English for the layers of this dermic coat, which in the text to Figs. 1489 and 1491 I have called *outer fibrous layer*, *inner fibrous layer*, and *hyaline layer*, respectively, these terms being literal translations of the German names used by the author in the original. Macalister describes these layers in the following words (*op. cit.*, p. 94): "(1) A condensed layer of the stratum reticulare of the cutis, with longitudinal fibres and connective cells, lying upon (2) a modified extension of the papillary layer, with transverse, flattened connective cells and a few unstriped fibres; (3) a homogeneous basement membrane internally." Quain describes the first and second layers in similar terms, and of the third layer he writes (*op. cit.*, vol. iii., part iii., p. 422): "The most internal layer (*hyaline layer*, Kölliker) is a transparent homogeneous membrane, marked transversely on its inner surface with some raised lines, and not reaching so high as

the mouth of the follicle; it corresponds with the *membrana propria* or basement membrane of allied structures." The looser connective tissue of the *outer fibrous layer*, the *circular fibres* of the *inner fibrous layer*, and the thin, structureless *hyaline layer*, are well shown in Fig. 1491. Next within the last-named is the broad *outer root-sheath*, consisting of several layers of polygonal cells (this corresponds with the Malpighian layer of the general surface of the skin), and then the trilaminar *inner root-sheath*, fully described in the last note. Finally we reach the *cortical* and then the *medullary substance* of the hair proper. (The *hair-cuticle* is not shown either in this figure or in any of the others.)

⁵⁸³ **Retinacula of the Skin* (Fig. 1493, p. 953).—"Clearly defined and firm connexions between the skin and subjacent structures also exist in the form of the so-called *retinacula cutis*; these are tense bands of connective tissue, which are usually attached to bony prominences, radiating thence to determinate areas of skin" (Von Langer and Toldt, *op. cit.*, p. 822). In this instance the **retinacula* pass from the *epicranial* or *occipitofrontal aponeurosis* (*galea aponeurotica*) to the skin covering that membrane. In English works on anatomy the intimate connexion between these two layers of the scalp is always described. Ellis, for instance, writes (*op. cit.*, pp. 2, 3): "Superficial to the aponeurosis are the vessels and nerves of the scalp and a small quantity of fat, which is traversed by numerous short fibrous bands uniting it closely to the skin." But neither this author, nor Quain, nor Macalister, denotes these fibrous bands by the name **retinacula cutis*.

⁵⁸⁴ *Lines of Cleavage of the Skin* (Figs. 1496, 1497, p. 954).—The subject of the "cleavage" (*Spaltbarkeit*) of the skin, which has important practical bearings on both dermatology and surgery, was first investigated by C. Langer and S. Swerchesky, and

was discussed at considerable length by O. Simon. A short account of the matter is to be found in Von Langer and Toldt's "Anatomie," 7th ed., pp. 824, 825; and the subject is also alluded to briefly by Crocker ("Diseases of the Skin," 1888, p. 13 *et seq.*), who gives a list of authorities.

⁵⁸⁵ *Hair-Streams and Hair-Whorls* (Figs. 1498, 1499, p. 955).—"Since the hair-follicles are inserted obliquely into the skin, the shafts or stems of the hairs are disposed in layers, and in those areas in which they are arranged in rows they form *hair-streams*, *flumina pilorum*. Where, on the other hand, the roots of the hairs approximate as they recede from the surface, *hair-whorls*, *vortices pilorum*, are formed, as on the vertex cranii. Such a whorl is also occasionally met with over the coccyx, the *coccygeal whorl*, *vortex coccygeus*" (Von Langer and Toldt, *op. cit.*, p. 826).

⁵⁸⁶ *Vallum Unguis* (Figs. 1502, 1503, 1505, p. 956).—This name (*Nagelwall* in the vernacular) is given in Germany to the fold of skin surrounding and overlapping the nail and forming the outer boundary of the marginal groove of the nail-bed (*sulcus matricis unguis*). Macalister, however, distinguishes between the portion of the *vallum* overlapping the root or concealed margin of the nail and the portions overlapping the lateral margins of the nail, terming the former *nail-fold* and the latter *nail-walls* (*op. cit.*, p. 277).

⁵⁸⁷ *Epidermic Portion of the Nail, or Nail proper* (Figs. 1504, 1505, p. 956).—In Fig. 1504 Toldt describes this as the *stratum corneum*, and Quain (*op. cit.*, *tom. cit.*, p. 419) also says that this part of the nail "corresponds in nature with the horny layer." According to Macalister, however (*op. cit.*, p. 277), this part of the nail "represents an enormously developed *stratum lucidum*, over the base of which is a soft fold, the partially developed *stratum corneum*, or *eponychium*." See also note ⁵⁸⁰ above.

PRINCIPAL WORKS OF REFERENCE CONSULTED BY
THE TRANSLATOR IN PREPARING THE ENGLISH
EDITION OF TOLDT'S "ATLAS OF
HUMAN ANATOMY."

VON LANGER AND TOLDT: *Lehrbuch der Systematischen und
Topographischen Anatomie*, 7te Auflage, 1902.

QUAIN: *Elements of Anatomy*, 10th ed., 1890-1896.

MACALISTER: *Text Book of Human Anatomy*, 1889.

ELLIS: *Demonstrations of Anatomy*, 10th ed., 1887.

YOUNG: *Synopsis of Human Anatomy*, 1889.

FOSTER: *Text-Book of Physiology*, 5th ed., 1888-1892.

HALLIBURTON: *Hand-Book of Physiology*, 4th ed., 1901.

GOWERS: *Manual of Diseases of the Nervous System*, 2nd ed.,
1902, 1903.

NETTLESHIP: *Diseases of the Eye*, 6th ed., 1897.

TREVES AND LANG: *German-English Dictionary of Medical
Terms*.

INDEX
TO THE
NEUROLOGY
AND TO THE
ORGANS OF THE SENSES

INDEX

TO THE NEUROLOGY AND TO THE ORGANS OF THE SENSES

Certain names in this Index have an asterisk (*) prefixed; these, as more fully explained in the Translator's Preface being terms that form part of the English nomenclature used in this work, but which are not commonly employed by English anatomists. To other names a dagger (†) is prefixed; these are Latin names used by the author in the original work, but not included in the official nomenclature of the "Anatomische Gesellschaft." Abbreviation: App. = Appendix.

A.

- ACCESSORY cartilage of the Eustachian tube, 929
 cartilages of the nose, 942
 cavities of the nose, 944
- Acervulus (cerebri), or brain-sand, 789
- Aditus ad aquæductum cerebri, 764, 791
 orbitæ, 910
- Æquator bulbi, 892
 lentis, 895, 900
- Agger nasi, 944
- Ala cinerea, 768
 lobuli centralis, 770, 771
 nasi, 942, 944, 946
- Alveolar plexus, see "Plexus, dental"
- †Alveus, 785
- Ampulla or ampullæ:
 ductus lacrimalis, 912, 913
 of the lachrymal canaliculus, 912, 913
 membranaceæ, 936-938
 of the membranous semicircular canals, 936-938
 osseæ, 930-933, 935, 938
 of the osseous semicircular canals, 930-933, 935, 938
- Amygdala (of the cerebellum), 770-773
- Angle of the anterior chamber, 892
- Angulus iridis, 892
 oculi (lateralis, medialis), 908, 910
- *Annulus ciliaris, 894, 896, 901, and App., note 483
 conjunctivæ, 902, 910, and App., note 483
 fibrocartilagineus (membranæ tympani), 925
 fibrosus, 925
 iridis major, 896 and App., note 487
 minor, 896 and App., note 487
 tendineus communis [Zinni], 903, 905
 tympanicus, 924, 926
- Ansa cervicalis, 817, 877, and App., note 421
 superficialis, 870, 871, and App., note 420
 hypoglossi, 817, 877, and App., note 421
 infrahyoidea, 817, 877, and App., note 421
 lenticularis, 792, 797
 peduncularis, 792 and note, 797
 (of the spinal nerve roots), 812 and note, 873
 subclavia (Vieussensii), 816, 878, 884, 887
 of Vieussens, 816, 878, 884, 887
- Anthelix, 920
- Antihelix, 920
- Antitragus, 920, 922, 923
- Antrum of Highmore, 918, 944-947
 mastoid, 919, 926, 927, 932
 tympanicum, 919, 926, 927, 932
- Aortic plexus, see "Plexus, aortic"
- Apertura externa aquæductus vestibuli, 933
 † interna aquæductus vestibuli, 930
 canaliculi cochleæ, 930, 934
 lateralis ventriculi quarti, 767
 mediana ventriculi quarti, 767, 802
 piriformis, 905
 sinus frontalis, 944
 maxillaris, 944, 945, 947
 sphenoidalis, 944, 945
- †Apertura vestibularis cochleæ, 931, 932, 935, 937
 *Aperture of the fourth ventricle, lateral, 767
 median, 767, 802
 nasal, anterior, 905
- Apex columnæ posterioris, 754, 755
 cornu posterioris, 754 and note, 755, and App., note 339
 nasi, 942
 of the posterior grey column, 754 and note, 755, and App., note 339
- Apparatus, lachrymal (apparatus lacrimalis), 911-913
- Aquæductus cerebri [Sylvii], 761, 763, 764, 776, 789, 791
 vestibuli, 930, 931, 933
- Aqueduct of the cochlea, 930, 931
 of Sylvius, 761, 763, 764, 776, 789, 791
 anterior extremity of, 764, 791, and App., note 334
 of the vestibule, 930, 931, 933
- Arachnoid, cranial, 779, 802, 803, 904
 spinal, 755, 758, 789, 802, 803, 808
- Arachnoidea encephali, 779, 802, 803, 904
 spinalis, 755, 758, 759, 802, 803, 808
- Arbor vitæ cerebelli, 764, 776
- Arborization, App., note 321
 terminal, 756
- Arc, reflex, 757
- Arch, arterial, tarsal, 910
 of the stapes, App., note 518
- Arched or arcuate fibres, see "Fibres, arcuate"
- Arcus tarseus, 910
- Area or areas:
 acustica, 768, 787
 of Broca, 777, 793, 795
 of the cochlea (area cochleæ), 932, 934, 935, and App., note 534
 cribrosa media, 934, 935, and App., note 532
 superior, 932, 935, and App., note 531
 cutaneous, of the brachial nerves, 835
 of the crural nerves, 835
 of the nerves of the lower extremity, 851
 of the trunk, 811
 of the upper extremity, 835
 of the trigeminal nerve, 811, 858
- * of the facial nerve (area nervi facialis), 934, 935, and App., note 538
- * parolfactory (area parolfactoria Brocæ), 777, 793, 795
 vestibularis inferior, 934, 935
 superior, 932, 935
- Arnold, ganglion of, see "Ganglion, otic"
 nerve of, 868, 876
 reticulated white substance of, 785
- Arteria vel arteriæ:
 auditiva interna, 940
 centralis retinæ, 897, 899, 915, 916
 chorioidea, 784
 ciliares, 895
 anteriores, 893, 895, 897
 posteriores breves, 894, 897, 899
 longæ, 894, 897
 conjunctivales (anteriores, posteriores), 897
 episclerales, 893, 897
 hyaloidea, 915, 916

- Arteria vel arteriæ:**
 meningeæ media, 905-907
 ophthalmica, 804, 868, 906, 915
 spinales, 754
- Arteriolæ retinæ, 898**
- Artery or arteries:**
 auditory, internal, 940 and App., note ³³¹
 central, of the retina, 897, 899, 915, 916
 choroid, anterior, 784
 ciliary, 895
 anterior, 893, 895, 897
 posterior, long, 894, 897
 short, 894, 897, 899
 conjunctival, anterior, 897
 posterior, 897
 episcleral, 893, 897
 hyaloid, 915, 916
 meningeal, middle or great, 905-907
 ophthalmic, 804, 868, 906, 915
 of the retina, central, 897, 899, 915, 916
 nasal, inferior, 898
 superior, 898
 temporal, inferior, 898
 superior, 898
 spinal, 754
- Articulatio incudomalleolaris, 925**
 incudostapedial, 925
- Association bundle, see "Bundle, association"**
 fibres, see "Fibres, association"
- Attachment of the choroid plexus of the lateral ventricle, inner layer, see "Tænia fornix" and "Tænia fimbriæ"**
- Attachment of the choroid plexus of the lateral ventricle, outer layer, see "Tænia choroidea"**
- Attachment of the velum interpositum along the pineal stria, see "Tænia thalami"**
- Atrium of the middle meatus of the nose (atrium meatus nasi medii, region of the atrium), 903, 905, 944**
- Auditory ossicles, 918, 919, 925**
 striæ, 768, 787
 triangle, 768, 787
 vesicle, 762, 858
- Auricle, 918-920**
- Auricula, 918-920**
- †Auris externa, 918-924**
 interna, 918, 930-940
- † media, 918, 925-929**
- Axis of the eye, 892**
 external, 892
 internal, 892
- of the lens, 900**
- lentic, 900**
- oculi, 892**
 externa, 892
 interna, 892
- optic, 892**
- optica, 892**
- of the optical system, 892**
- of vision, 892**
- visual, 892**
- Axis-cylinder, 746**
 process, 747, 750, and App., note ³³¹
- Axon, 747, 750, and App., note ³³¹**
- B.**
- Baillarger, line of, outer, 785**
- Band of Reil, covered, see "Cingulum"**
 vascular, of the canal of the cochlea, 939
- Basal plate of the stapes, see "Base of the stapes"**
- Base of the brain, 774**
 of the cochlea, 931, 933
 of the modiolus, 934, 935, 937, 939, and App., note ³³⁰
 of the posterior grey column, 786 and note, also App., note ³³⁰
 horn, 786 and note, also App., note ³³⁰
 of the stapes, 925, 926, 932
- Basilar membrane, 939**
 portion of the pons Varolii, 787, 788
- Basis cochleæ, 931, 933**
- † columnæ posterioris, 786**
- Basis cornu posterioris, 786, note**
- † encephali, 774**
 modioli, 934, 935, 937, 939
 pedunculi, 775, 785, 788-790, 792
 stapedis, 925, 926, 932
- Bloodvessels of the eyeball, 897, 898**
 of the labyrinth, 940
 of the skin, 950
- Body or bodies:**
 ciliary, 893, 895
 rudiment of, 915
 of the corpus callosum, 780, 783-785, 790, 794, 802, 808
 of the fornix, 764, 781, 783, 785, 795
 geniculate, 761
 external or lateral, 765-767, 769
 internal or mesial, 766-768, 789, 796
 of the incus, 923, 925, 926
 of the lateral ventricle of the brain, 781, 784, 785, 922
 of nail, 956
 olivary, 752, 753, 763, 765, 766, and App., note ³³⁷
 Pacchionian, 779, 802
 Pacinian, see "Corpuscle, Pacinian"
 pineal, 761, 764, 767, 776, 782, 789, 791, 794, and App., note ³³⁸
 transverse frænulum of, see "Commissure of the habenulæ"
 pituitary, 760, 761, 764, 774, 776, 802, 808
 quadrigeminal, 760-764, 766-768, 791, note 5 to p. 760, and App., note ³⁷³
 inferior or posterior, 767, 791, 796, and App., note ³⁷³
 superior or anterior, 767, 789, 796, and App., note ³⁷³
 restiform, 765, 771-773, 786, 787
 of sudoriferous gland or sweat gland, 950, 953
 tarsal, see "Tarsus"
 touch, App., note ³²¹
 turbinate, see "Turbinal"
 vitreous, 892, 900
 rudiment of, 914, 915
- Border of the cerebral hemisphere, upper mesial, 778**
- Bowman's membrane, 748, 893**
- Brachial plexus, see "Plexus, brachial"**
- Brachium conjunctivum, 760, 761, 766-768, 771-773, 788, 789**
 pontis, 765-769, 771-773, 791
 of the quadrigeminal bodies, inferior or posterior, 766, 767, 789
 superior or anterior, 767
 quadrigeminum inferius, 766, 767, 789
 superius, 767
- Brain, coronal sections of, 791-793**
 course of fibres of, 796-801
 divisions of, 760, 761
 development of, 762, 763
 horizontal sections of, 794, 795
 transverse sections of, 786-790
- Brain-sand, 789**
- Branch, ascending or carotid, of the superior cervical ganglion, 816, 859, 874, 876, 884, 886**
- Branches, mammary, 815 and note**
- Broca, area of, 777, 793, 795**
- Bruch, membrane of, 895 and App., note ⁴⁸⁶**
- Bulb of the fornix, see "Corpus albicans"**
 of the hair, 952, 953
 of the internal jugular vein, 804, 806, 807
 olfactory, 774, 775, 803, 807, 862
 of the posterior horn (of the lateral ventricle), 781, 791
- Bulbus cornu posterioris, 781, 791**
 oculi, 892, 902, 904, 905, 909, 910
- † facies inferior, 892, 902**
- † nasalis, 892**
- † superior, 892, 902**
- † temporalis, 892**
- † olfactorius, 755, 774, 803, 807, 862**
- † pili, 952, 953**
- † venæ jugularis superior, 804, 806, 807**
- Bulla, ethmoidal (bulla ethmoidalis), 944, 945**

Bundle or bundles:

- association, anterior, 801 and App., note ⁴⁰⁶
- * crustal, of the fillet, 796 and App., notes ³⁹⁷ and ⁴⁰⁶
- longitudinal, dorsal, 764, 769, 772, 787-789, 791, 799
 - inferior, 801 and App., note ⁴⁰⁶
 - posterior, 764, 769, 772, 787-789, 791, 799
 - superior, 801 and App., note ⁴⁰⁶
- Meynert's, 791
- of the optic tract, crossed, 798
 - uncrossed, 798
- primary, of peripheral nerves, App., note ³²⁰
- pyramid, of the pons, 764, 787, 788, 790
- secondary, of peripheral nerves, App., note ³²⁰
- solitary, see "Funiculus solitarius"
- Vicq d'Azyr's, 783, 785, 792
- Burdach, column of, 756 and App., note ³⁴⁸
- tract of, 756 and App., note ³⁴⁸
- Bursa trochlearis, 903, 904

C.

- Cæcum, cupolar (cæcum cupulare), 936 and App., note ⁵⁴⁵
- vestibular (cæcum vestibulare), 936 and App., note ⁵⁴⁵
- Calamus scriptorius, 764, 768, 786
- Calcar avis, 781, 782, 791, 794
- Calculus ophthalmicus, 914, 915
- Camera oculi anterior, 892, 893, 898
- posterior, 892, 893
- Canal or canals:
 - central, of the spinal cord, 754, 755, 786
 - of the cochlea, 936, 937, 939
 - osseous, spiral, 934 and App., note ⁵³⁶
 - of the modiolus, central, 934, 935, and App., note ⁵³⁹
 - longitudinal, 934 and App., note ⁵³⁹
 - spiral, 934
- * musculotubal, 929, 933, 934, and App., note ⁵³⁸
- nasopalatine, 943, 946
- of Scarpa, 862 and App., note ⁴⁸¹
- of Schlemm, 893, 897
- semicircular, membranous, 936, 938
 - osseous, 918, 919, 930-933, 935, 938
- of Stensen, 943, 946, and App., note ⁴⁸¹
- Canaliculus cochleæ, 930, 931
- lachrymal, inferior, 912, 913, 915
- superior, 912
- Canalis *vel* canales:
 - centralis (medullæ spinalis), 754, 755, 786
 - modioli, 934, 935
 - cochleæ, see "Canal of the cochlea"
 - longitudinales modioli, 934
 - membranaceus cochleæ, see "Canal of the cochlea"
 - musculotubarius, 929, 933, 934
 - reuniens (of Hensen), 936
 - Schlemm [Lauthi], 893, 897
 - semicirculares ossei, 918, 919, 930-933, 935-938
 - spiralis cochleæ, 934
 - modioli, 934
 - utriculosaccularis, 936
- Canthus of the eye, inner, 908, 910, and App., note ⁴⁰⁸
- outer, 908, 910, and App., note ⁴⁰⁸
- Cap, grey, 789 and App., note ⁴⁰⁸
- Capilli, 953
- Capitulum mallei, 922, 924-926
- stapedis, 925
- Capsula externa, 790, 792-795
- interna, 766, 790-797, 900
- lentic (crystallinae), 893, 895, 900, 915, 916
- nuclei dentati, 772, 773
- Capsule, connective-tissue, of terminal corpuscles of sensory nerves, 749 and App., note ³²⁸
- * of the dentate nucleus, 772, 773, and App., note ³²⁴
- external, 790, 792-795
- internal, 766, 790-797, 900
- of the lens, 893, 895, 900, 915, 916
- of Tenon, 906, 907
- †Caput columnæ posterioris, 754, 755, 786
- cornu posterioris, 754, 755, note, 786, note, also App., note ³²⁸
- corporis striati, 780-782, 784

Caput nuclei caudati, 766, 790, 793-795

Cardiac plexus, see "Plexus, cardiac"

Carotid plexus, see "Plexus, carotid"

Cartilage or cartilages:

- accessory, of the Eustachian tube, 929
- of the nose, 942
- alar, greater, 942-944, 946, 947
- lesser, 942 and note
- of the aperture, 942-944, 946, 947
- of the auricle, 921
- of the external auditory meatus, 920-922
- Eustachian, 928, 929
- of Jacobson, 943 and App., note ⁵⁸³
- lateral, lower, 942-944, 946, 947
- upper, 942-944
- nasal, 942, 943
- of the nose, 942, 943
 - accessory, 942
- of the pinna, 921
- quadrate, accessory, 942 and note
- septal, 942, 943, 946, 947
 - lateral expansion of, see "Cartilage, lateral, upper"
- of the septum of the nose, 942, 943, 946, 947
- sesamoid (of the nose), 942
- vomerine, 943 and App., note ⁵⁸³
- Cartilago *vel* cartilagine:
 - alares minores, 942
 - alaris major, 942-944, 946, 947
 - auriculæ, 921
 - meatus auditorii externi, 920-922
 - nasi, 942, 943
 - lateralis, 942-944
 - septi nasi, 942, 943, 946, 947
 - sesamoideæ (nasi), 942
 - tubæ auditivæ, 928, 929
 - vomeronasalis [Jacobsoni], 943
- Caruncle, lachrymal, 908-910, 912, 915
- Caruncula lacrimalis, 908-910, 912, 915
- Cauda corporis striati, 767, 781, 782, 784
- equina, 753, 758
- helicis, 921
- nuclei caudati, 766, 785, 791, 794, 795
- Cavernous plexus, see "Plexus, cavernous"
- Cavities, accessory, of the nose, 944
- Cavity, nasal, 941-948
 - tympanic, 918, 919, 926-928
- *Cavum conchæ, 920, 923, and App., note ⁵⁰⁸
- epidurale, 758, 759
- nasi, 941-948
- septi pellucidi, 781
- subarachnoideale, 755, 759, 779, 802, 803
- subdurale, 759, 803
- tympani, 918, 919, 926-928
- Cell or cells:
 - body of nerve cell, 747
- * commissural, 756 and App., note ⁵⁴⁰
- ethmoidal, 905, 945
- Golgi's, 756 and App., note ³⁵⁰
- * intercalary, 756 and App., note ³⁵⁰
- mastoid, 926, 927
- solitary, 756 and App., note ³⁵⁰
- tactile, 749
- tympanic, 923
- Cellulæ ethmoidales, 905, 945
- mastoideæ, 926, 927
- tympanicæ, 923
- Central canal of the spinal cord, 754, 755, 786
- lobe, 779, 790, 792-795
- nervous system, 751-808
- tract of the auditory nerve, 796 and note
- Centre of the cornea, 892
- medullary, of the cerebellum, 772, 773, 776
- of the cerebrum, see "Centrum ovale"
- Centrum ovale majus, 780 and note
- minus, 780, note
- semiovale, 780
- Cerebellar tract, see "Tract, cerebellar"
- Cerebellum, 760-764, 770-773, 808
- Cerebrum, 761, 774-785

- Cerebrum, convex or outer surface (*facies convexa*), 776-779
 inferior surface or base (*facies basalis*), 774, 775
 inner or mesial surface (*facies med.*), 776, 777, 783
 Cervical plexus, see "Plexus, cervical"
 Cervix columnæ posterioris, 754, 755, 786
 cornu posterioris, 754, 755, note, 786, note, and App., note ²⁴⁹
 Chamber of the eye, anterior, 892, 893, 898
 posterior, 892, 893
 Chiasma opticum, 763-766, 774-776, 792, 793, 798, 804, 805, 815
 † Chorda cesophagea anterior, 872, 879, 889
 posterior, 872, 888, 889
 † tympani, 859, 863, 864, 867-869, 923
 Choriocapillaris, 895 and App., note ⁴⁰⁸
 Chorioidea, 892-899, 901, 915
 Choroid coat of the eyeball, 892-899, 901, 905
 plexus, see "Plexus, choroid"
 Choroidal fissure, 914, 915, and App., note ⁵⁰⁷
 Cilia, 908, 910
 Ciliary body, 893, 895
 rudiment of, 915
 bundle, 909, 910
 folds, 895 and App., note ⁴⁰⁴
 gangliated plexus, 894, 896, and App., note ⁴⁰⁸
 muscle, 892-897, 901
 processes, 892, 893, 895, 897, 901
 Cingulum, 801 and App., note ⁴⁰⁸
 Circulus arteriosus (iris), major, 893, 897
 minor, 897
 major (of the iris), 893, 897
 minor (of the iris), 897
 Cisterna cerebellomedullaris, 802
 chiasmatis, 802, 803
 corporis callosi, App., note ⁴⁰⁹
 fissuræ lateralis cerebri, 802, 803
 interpeduncularis, 802, 803
 laminae cinereæ, App., note ⁴⁰⁸
 peripeduncularis, App., note ⁴⁰⁸
 † pontis, 802, 803
 venæ cerebri magnæ, 802
 Cisternæ subarachnoideales, 785, 802, 803
 Clarke's column, 755 and App., note ²³⁰
 Claustum, 790-795
 Clava, 752, 753, 766, 768
 Cleavage, lines of, 954 and App., note ⁵⁴⁴
 Cleft, palpebral, 908
 Clefts, subarachnoid, App., note ⁴⁰⁹
 Clivus monticuli, 770, 772
 Coat of the eyeball, choroid, see "Choroid"
 external, 892
 fibrous, 892
 middle, 892
 sclerotic, see "Sclerotic"
 vascular, 892
 Cochlea, 918, 919, 930, 931, 934
 area of the, 932, 934, 935, and App., note ⁴⁰⁴
 Collaterals, 747, 750, 755-757, and App., note ²²¹
 Colliculus corporis quadrigemini inferior, 767, 791, 796
 superior, 767, 789, 796
 facialis, 768, 787
 Collum folliculi pili, 952
 mallei, 823-825
 Coloboma of the choroid, App., note ⁵⁰⁷
 of the iris, App., note ⁵⁰⁷
 oculi, 914, 915
 Columella cochleæ, see "Modiolus"
 Column or columns:
 of Burdach, see "Column, posterolateral"
 cuneate, 752-754, 766, 768, 786, 796
 of Goll, see "Column, posteromedian"
 posterolateral, 756 and App., note ³⁴⁸
 posteromedian, 756 and App., note ³⁴⁸
 slender, 752-754, 766, 768, 786, 796
 of the spinal cord, grey, 754, 755, 786, and App., n. ³³⁰
 white, anterior, 752-754 and App., note ³³⁰
 lateral, 752-754, 765, 766, 768, and App., note ³³⁰
 posterior, 752-754, 796, and App., note ³³⁰
 Column of Türck, see "Tract, pyramidal, anterior"
 vesicular, of Lockhart Clarke, 755 and App., note ²³⁰
 Columna *vel* columnæ:
 fornicis, 776, 781-784, 790-795
 medullæ spinalis, 754, 755, 786
 nasi, 913, 942, 943
 Commissura baseos alba (of Henle), 776 and App., note ²³⁷
 'cerebri', anterior, 763, 764, 766, 782, 783, 792, 793, 795
 pars anterior, posterior, 801
 posterior, 764, 768, 789, 791
 habenularum, 764, 767, 782, 791
 hippocampi, 784, 795
 inferior [Guddeni], 793
 (medullæ spinalis), anterior (alba, grisea), 755
 posterior, 755
 palpebrarum (lateralis, medialis), 908
 superior [Meynerti], 792
 *Commissural cells, 756 and App., note ²⁴⁸
 Commissure of the cerebrum, anterior, 763, 764, 766, 782, 783, 792, 793, 795, and App., note ⁴⁰⁸
 anterior or olfactory portion, 801 and App., note ⁴⁰⁸
 posterior or temporal portion, 801 and App., note ⁴⁰⁸
 middle or soft, 764, 776, 782, 792, 794
 posterior, 764, 768, 789, 791
 of the eyelids, inner, 908 and App., note ⁴⁰⁸
 outer, 908 and App., note ⁴⁰⁸
 great, see "Corpus callosum"
 of Gudden, 793
 of the habenulæ, 764, 767, 782, 791, and App., note ²⁴⁵
 inferior, 793
 Meynert's, 792
 optic, 763-766, 774-776, 792, 793, 798, 804, 805, 815
 of the spinal cord, anterior or white, 755 and App., note ²⁴¹
 posterior or grey, 755 and App., note ²⁴¹
 superior, 792
 Conarium, see "Body, pineal," and App., note ²⁴⁸
 Concha (of the auricle), 920, 922
 auriculæ, 920, 922
 nasalis inferior, 903, 913, 914, 944, 945
 media, 913, 914, 944, 945, 948
 superior, 913, 944, 945, 948
 suprema [Santorini], 945 and App., note ²³⁷
 Cone cell, 899 and App., note ⁴⁰¹
 of fat, orbital, 902, 906, 907, 911
 fibrous (of the cerebrum), see "Corona radiata"
 Cones, retinal, 899
 Confluence of the sinuses (of the dura mater), 804, 808, 860
 Confluens sinuum, 804, 808, 860
 Conjunctiva bulbi, 893, 907, 908, 910
 lymphoid follicles of the, 910
 ocular, 893, 907, 908, 910
 palpebral, 907, 908, 910
 palpebrarum, 907, 908, 910
 Connective tissue, episcleral, 892, 893, 895
 epivaginal, 899
 Constriction of Ranvier, see "Node of Ranvier"
 Contraction-folds of the iris, 896 and App., note ⁴⁸⁷
 Conus medullaris, 752-754
 terminalis (of the spinal cord), 752-754
 Convolution, parietal, inferior, 777 and note, 778
 superior, 777, 778
 see also "Gyrus"
 Cord of the brachial plexus, inner or lower, 822, 823, and App., note ⁴²⁸
 middle or posterior, 823 and App., note ⁴²⁸
 outer or upper, 822, 823, and App., note ⁴²⁸

- Cord, great gangliated, of the sympathetic :
 cervical portion, 884
 lumbar portion, 885
 sacral portion, 885
 thoracic portion, 885
 lumbosacral, 836, 856, 885
 * cesophageal, anterior, 872, 879, 889, and App., note ⁴⁶⁴
 * posterior, 872, 888, 889, and App., note ⁴⁶⁴
 spinal, see "Spinal cord"
 sympathetic, great gangliated cord of"
- Corium, 950, 951, 953
 Cornea, 892-894, 908, 910, 914, 915
 Cornu Ammonis, see "Hippocampus major"
 anterus ventriculi lateralis, 781, 782, 784, 790, 792-794
 inferius ventriculi lateralis, 781, 782, 784, 785, 790-792, 794, 795
 posterius ventriculi lateralis, 781, 782, 784, 791, 794
 Cornua of the grey matter of the spinal cord, see "Columns of the spinal cord, grey," and App., note ³³⁹
 Corona ciliaris, 895, 901, 906, and App., note ⁴⁹⁸
 radiata, 790, 797, 800
 * peduncle of the, see "Capsule, internal"
 Coronary plexus, see "Plexus, coronary"
 Corpus *vel* corpora :
 adiposum orbitæ, 902, 906, 907, 911
 albicans, 764-766, 774, 776, 783, 790, 792
 callosum, 763, 764, 777, 780, 781, 783, 791-795, 801
 ciliare, 893, 895
 fimbriatum, see "Tænia hippocampi"
 fornicis, 764, 781, 783, 785, 795
 geniculata, 761
 geniculatum laterale, 765-767, 769
 mediale, 766-768, 789, 796
 glandulæ sudoriferæ, 950, 953
 incudis, 923, 925, 926
 Luysi, 785, 791, 792, 797
 mamillare, 764-766, 774, 776, 783, 790, 792
 medullare cerebelli, 772, 773, 776
 papillare (corii), 950, 956
 pineale, 761, 764, 767, 776, 782, 789, 791, 794
 quadrigemina, 760-764, 766-768, 791
 restiforme, 765, 771-773, 786, 787
 striatum, 760-763, 767, 780-782, 784
 subthalamicum, 785, 791, 792, 797, and App., note ⁴⁰²
 trapezoides, 787, 796
 trapezoideum, 787, 796
 unguis, 956
 vitreum, 892, 900
 Corpuscle, bulboid, 749
 Pacinian, 749, 834, and App., note ³²⁸
 of Purkinje, 747
 tactile, 749, 950, and App., note ³²⁴
 of Vater, see "Corpuscle, Pacinian"
 Corpuscula bulboidea [Krause], 749
 lamellosa [Vateri, Pacini], 749, 834
 nervorum terminalia, 749
 tactus [Meissneri], 749, 950
 Cortex of the cerebellum, 764, 772
 of the cerebrum, 785
 of the lens, 893, 900
 of hair, 952
 Corti, organ of, 939
 Course of the fibres of the brain, 796-801
 of the spinal cord, 756, 757
 Covered band of Reil, see "Cingulum"
 Crest, lachrymal, of the lachrymal bone, 912, 913
 lateral, of the septum (var.), 945, 946, and App., note ⁵⁵⁶
 transverse, 930, 932, 934, 935
 of the vestibule, 930, 931, 933
 Crista *vel* cristæ :
 acustica, 936, 938, and App., note ⁵⁴⁸
 ampullaris, 936, 938
 cutis, 950, 956
 falciformis, 930, 932, 934, 935
 lacrimalis anterior, 912, 913
 posterior, 912, 913
 † lateralis septi (nasi), 945, 946
 Crista *vel* cristæ :
 matricis unguis, 956
 spiralis, 939, note
 transversa, 930, 932, 934, 935
 vestibuli, 930, 931, 933
 Crus or crura :
 ampullary (crura ampullaria), 930, 935, and App., note ⁵²⁰
 of the antihelix (crura antihelices), 920
 cerebelli ad cerebrum, see "Peduncle of the cerebellum, superior"
 ad medullam, see "Peduncle of the cerebellum, inferior"
 ad pontem, see "Peduncle of the cerebellum, middle"
 cerebri, 760, 761, 765-768, 774, 789-791
 common, 930, 931, 933, 936, and App., note ⁵²⁰
 commune, 930, 931, 933, 936
 curvilineum stapedis, App., note ⁶¹⁸
 fornicis, 783, 784, 794, 795
 of the helix (crus helices), 920, 922, 923
 incudis breve, 925
 longum, 923, 925, 927
 rectilineum stapedis, App., note ⁶¹⁸
 simple (crus simplex), 930, 931, and App., note ⁵²⁰
 of the stapes, anterior (crus stapedis anterior), 925 and App., note ⁶¹⁸
 posterior (crus stapedis posterior), 925 and App., note ⁶¹⁸
 Crusta of the cerebral peduncle, 775, 785, 788-790, 792
 of the crus cerebri, 775, 785, 788-790, 792
 *Crustal bundle of the fillet, 788, 796, and App., notes ³⁰⁷ and ⁴⁰⁶
 *Crypts of the iris, 896 and App., note ⁴⁸⁷
 Culmen monticuli, 770-772
 Cuneus, 777, 783, 795, 798
 Cup, optic, 914, 915
 physiological, 892, 898, 899
 Cupola of the cochlea, 930, 931, 933, 937
 Cupula cochleæ, 930, 931, 933, 937
 *Cupular portion of the epitympanic recess, 922, 925, 926, and App., note ⁵¹¹
 Cushion of the Eustachian orifice, 919, 928, 946
 levator, 928, 944, and App., note ⁵²⁷
 Cutaneous area, see "Area, cutaneous"
 nerve, see "Nerve, cutaneous"
 Cuticle, 950, 951
 Cutis, 950, 951
 vera, see "Corium"
 *Cymba conchæ, 920, 923, and App., note ⁵⁰⁶
- D.
- Dartos, 951
 Darwin, tubercle of, 920
 Declive, 770, 772
 †Decursus fibrarum cerebrarium, 796-801
 spinalium, 756, 757
 Decussatio brachii conjunctivi, 764, 772, 788, 797
 lemniscorum, 786, 796
 nervorum trochlearium, 769, 788
 pyramidum, 752, 753, 765, 786, 790, 800
 Decussation of the brachia conjunctiva, 764, 772, 788, 797, and App., note ³⁰⁹
 of the fillet, 786, 796, and App., note ³⁰⁴
 pyramidal, 752, 753, 765, 786, 790, 800
 superior, see "Decussation of the fillet," also App., note ³⁰⁴
 sensory, see "Decussation of the fillet"
 superior, see "Decussation of the fillet," also App., note ³⁰⁴
 of the superior peduncles of the cerebellum, 764, 772, 788, 797
 tegmental, 789 and App., note ³⁰⁹
 of the trochlear nerves, 769, 788
 Decussationes tegmentorum, 789
 Deferential plexus, see "Plexus of the vas deferens"
 Deiters' nucleus, 769, note
 Demours' membrane, 893
 Dendrites, App., note ³²¹

Dendron, 747, 750, and App., note ³²¹
 Dental plexus, see "Plexus, dental"
 Dentate gyrus, see "Gyrus, dentate"
 Derma, see "Corium"
 Descemet's membrane, 893
 Development of the eye, 914-916
 Diaphragm, pituitary, 805, 808, and App., note ⁴¹¹
 orifice of, 804
 Diaphragma sellæ, 805, 808
 Diencephalon, 760-762
 Digitations of the hippocampus major (digitationes hippocampi), 782, 792
 Division of spinal nerve, primary, anterior, 759, 810, 812
 posterior, 759, 810-813
 Dorsal portion of the pons Varolii, 788
 Duct nasal, 905, 906, 912, 913, 944-947
 sudoriferous, 950, 951, 953
 Ducts, excretory, of the lachrymal gland, 910, 911
 Ductuli excretorii glandulæ lacrimalis, 910, 911
 Ductus cochlearis, 936, 937, 939
 endolymphaticus, 936, 937
 incisivus, 943, 946
 lacrimalis (inferior, superior), 912, 913, 915
 nasolacrimalis, 905, 906, 912, 913, 944-947
 perilymphaticus, 937 and App., note ⁵⁴⁷
 reuniens [Henseni], 936
 Ductus semicirculares, 936, 938
 sudoriferous, 950, 951, 953
 utriculosaccularis, 936
 Dura mater, cranial (dura mater encephali), 803-808, 902-904
 spinal (dura mater spinales), 753, 758, 759, 806-808, 873

E.

Ear, 917-940
 external, 918, 920-924
 rudiment of, 914
 internal, 918, 930-940
 middle, 918, 925-929
 Ear-cartilage, 921
 Edge of the cornea, 892, 893, 908
 of the eyelid, anterior, 908, 910
 posterior, 908, 910
 of nail, 956
 Elbow of the internal capsule, see "Knee of the internal capsule," also App., note ⁴⁰⁴
 Eminence, collateral, 782, 785, 791, 794
 of the concha, 920-922
 * Facial, 768, 787, and App., note ³⁷⁶
 * of Jacobson, 943 and App., note ⁵⁶⁴
 Eminences, vascular, of the iris, 896
 Eminentia collateralis, 782, 785, 791, 794
 conchæ, 920-922
 fossæ triangularis, 920, 921
 medialis (fossæ rhomboideæ), 768, 787
 papillaris, 923, 927, 931
 pyramidalis, 923, 927, 931
 scaphæ, 920, 921
 teres, 768, 787, and App., note ³⁷⁶
 Emissaria [Santorini], 806
 Emissarium condyloideum, 806
 mastoideum, 804, 806, 807
 occipitale, 806
 parietale, 806
 Emissary vein, see "Vein, emissary"
 End-bulb, spheroidal (of Krause), 749
 End-organ, motorial, 749 and note, 750
 End-plate, motorial, see "End-organ, motorial," and also footnote to p. 749
 Ending of motor nerve fibres, 749, 750
 of sensory nerve fibres, 748-750 and App., note ³²³
 Endoneurium, 746 and App., note ³²⁰
 Endothelium of the anterior chamber of the eyeball (endothelium cameræ anterioris), 893
 Enlargement, brachial, App., note ³²⁰
 cervical, 752, 755, and App., note ³²⁰
 crural, App., note ³²⁰
 lumbar, 752 and App., note ³²⁰
 Entrance to the orbit, 910

Epencephalon, 760 and note, 761, 762
 Ependyma (ventriculorum), 767, 785-787
 Epidermis, 950, 951, 953, 956, and App., note ³⁵⁰
 Epigastric plexus, see "Plexus, solar"
 Epineurium, App., note ³²⁰
 Epiphysis cerebri, see "Body, pineal," and App., note ³⁶⁵
 * Epithalamus, 760, 761, and App., note ³⁵⁴
 Epithelium of the (choroid) plexuses, App., note ³⁷⁴
 of the cornea (epithelium corneæ), 893
 of the lens capsule (epithelium lentis), 893
 Epitympaunc recess, 924-928, 932
 cupular portion of the, 922, 925, 926
 and App., note ³¹¹
 Episcleral connective tissue, 892, 893, 895
 Epivaginal connective tissue, 899
 Equator of the eyeball, 892
 of the lens, 895, 900
 Ergot, see "Hippocampus minor"
 Eustachian tube, 918, 919, 924, 926, 928, 929, 946
 Excavation, optic, 892, 898, 899
 Excavatio papillæ nervi optici, 892, 898, 899
 Excretory ducts, see "Ducts, excretory"
 External capsule, 790, 792-793
 ear, 918-924
 Eye, the, 891-916
 development of, 914-916
 globe of the, see "Eyeball"
 Eyeball, 892, 893, 902-905, 907
 horizontal section through, 892
 muscles of, 902-904
 position of, 904-907, 909
 vessels of, 897
 Eyebrow, 908
 Eyelashes, 908, 910
 Eyelids, 908-911, 913
 anterior surface, 908
 orbital portion, 908
 posterior surface, 909
 rudiments of, 914
 sagittal section of, 910
 tarsal portion, 908

F.

* Facial eminence, 768, 787, and App., note ³⁷⁶
 Falx cerebelli, 805, 808
 cerebri, 763, 803-805, 808, 914
 major, see "Falx cerebri"
 minor, see "Falx cerebelli"
 Fascia bulbi [Tenoni], 906, 907
 dentata (hippocampi), 763, 782, 783, 785, 791, 795
 palpebral, 907, 909
 of Tenon, 906, 907
 Fasciæ musculares orbitæ, 906, 907
 Fasciculus or fasciculi (see also "Bundle"):
 anterior proprius [Flechsigi], 756, 757
 anterolateralis superficialis [Gowersi], 756
 cerebellospinalis, 756, 757, 797
 cerebrospinalis, anterior, 756, 800
 lateralis, 756, 757, 786, 800
 cuneatus [Burdachi], 756
 gracilis [Golli], 756
 lateralis proprius [Flechsigi], 756, 757
 longitudinal, of the pons, 764, 787, 788, 790
 longitudinales (pyramidales) pontis, 764, 787, 788, 790
 longitudinalis, inferior, superior, 801
 medialis, 764, 769, 772, 787-789, 791, 799
 obliquus (pontis), 765, 766
 perpendicular, App., note ⁴⁰⁶
 plexus brachialis, 822, 823
 of the posterior commissure, tegmental, App., note ⁴⁰⁶
 retroflexus [Meynerti], 791
 * from the tegmental tract to the lenticular nucleus, 792 and App., note ⁴⁰²
 teres, see "Funiculus teres" and App., note ³⁷⁶
 thalamomamillaris [Vicq' d'Azyri], 783, 785, 792

- Fasciculus, uncinatus (fasciculus uncinatus), 801 and App., note ⁴⁰⁶
- Fasciola cinerea, 763
- *Fastigium, 764, 772, and App., note ³⁰⁶
- Fat, cone of, orbital, 902, 906, 907, 911
- Fenestra cochleæ, 930, 931, 933-935
- ovalis, 927, 930-935
- rotunda, 930, 931, 933-935
- vestibuli, 927, 930-935
- Fibræ arcuatæ cerebri, 801
- externæ, 765, 766, 786, 787, 797
- internæ, 786, 797
- cerebello-olivares, 787, 797
- lentic, 900
- pontis profundæ, 788
- superficiales, 764, 787, 788, 790
- zonulares, 893, 895, 901
- Fibres, arched, see "Fibres, arcuate"
- arcuate, external or superficial, 765, 766, 786, 787, 797, and App., note ³⁸³
- internal or deep, 786, 797
- association (of the cerebrum), short, 801 and App., note ⁴⁰⁶
- of the brain, course of, 796-801
- cerebello-olivary, 787, 797, and App., note ³⁸⁶
- ground, see "Ground fibres"
- of the lens, 900
- of the pons Varolii, transverse, deep, 788
- superficial, 764, 787, 788, 790
- upper or oblique, 765, 766
- of the spinal cord, course of, 756, 757
- of the suspensory ligament of the lens, 893, 895, 901, and App., note ⁴⁰⁶
- of the zonule of Zinn, 893, 895, 901, and App., note ⁴⁰⁶
- Fifth ventricle, 781
- Fila lateralia pontis, 766
- radicularia, 759, 786, 787, 789, 812
- Filaments of the roots of the spinal nerves, 759, 812
- Fillet of the corpus callosum, see "Cingulum"
- *Fistula bundle of the, 788, 796, and App., notes ³⁹⁷ and ⁴⁰⁶
- decussation of the, 786, 796, and App., note ³⁹⁴
- interolivary layer of the, 786
- lower or lateral, 772, 788, 791, 796
- mesial, 786-789, 796, 797
- nucleus of the lower or lateral, 788, 796, and App., note ³⁹³
- portion of the tegmental tract, 796 and App., note ⁴⁰³
- tract of the, 796 and App., note ⁴⁰³
- triangle of the, 766, 768
- *Filum of the spinal dura mater (filum duræ matris spinalis), 758 and App., note ³⁸³
- terminale, 752-754, 758
- Fimbria (hippocampi), 782, 783, 785, 791, 794, 795, and App., note ³⁹²
- Finger-tip, 956
- Fissura antitragohelicina, 921
- calcarina, 777, 781, 794, 795
- cerebri lateralis [Sylvii], 774-776, 780, 793
- chorioidea, 763, 775, 783, 785
- collateralis, 775, 785, 791
- hippocampi, 783
- longitudinalis cerebri, 762, 774, 775, 778
- mediana anterior, 752-755, 763, 765
- posterior, 768, 786
- parieto-occipitalis, 776-778, 795
- prima (of His), 777
- serotina (of His), 777
- transversa cerebelli, 771
- cerebri, 762, 776, 808
- Fissure (see also "Furrow," "Groove," and "Sulcus"):
- * antitragohelicine, 921
- calcarine, 777, 781, 794, 795
- callosomarginal, 777 and App., note ³⁹⁰
- choroidal (of the brain), 763, 775, 783, 785
- (of the developing eye), 914, 915, and App., note ⁵⁰⁷
- Fissure, collateral, 775, 785, 791
- dentate, 763, 783
- hippocampal, 763, 783
- horizontal, great, of cerebellum, 770-772, and App., note ³⁸³
- lachrymal, 914
- longitudinal, great, of the cerebrum, 762, 774, 775, 778
- median, anterior, 752-755, 763, 765, and App., note ³³³
- posterior, of the medulla oblongata, 768, 786
- of the spinal cord, see "Groove, median, posterior," and App., note ³³²
- paracentral, 777
- parallel, see "Sulcus, temporal, first or superior"
- parieto-occipital, 776-778, 795
- prelimbic, 777
- of Rolando, 776, 778
- of Sylvius, 762, 763, 774-776, 780, 793
- transverse, of the cerebellum, 771 and App., note ³⁸³
- of the cerebrum, 762, 776, 808
- Fissures of the brain (see also "Furrow," "Groove," and "Sulcus"), 775, 777, 778
- Flechsig, ground fibres of, see "Ground fibres"
- Flexures, cerebral (flexures of the developing brain), 762
- Flocculi accessory, 771
- secundarii, 771
- Flocculus, 766, 767, 770-772, 774
- stalk of the, 767, 771
- Floor of the tympanum, 926, 933
- Flumina pilorum, 955
- subarachnoid, App., note ⁴⁰⁰
- Fold or folds:
- * ciliary, 895 and App., note ⁴⁸⁴
- contraction, of the iris, 896 and App., note ⁴⁸⁷
- of the incus, 925, 926, and App., note ⁵¹⁵
- Fold or folds:
- * of the laryngeal nerve, 875
- * malleolar, anterior, 924 and App., note ⁵¹⁴
- posterior, 924 and App., note ⁵¹⁴
- nasopharyngeal, 928
- salpingopalatine, 928
- semilunar, of the conjunctiva, see "Plica semilunaris conjunctivæ"
- * of the stapes, App., note ⁵¹⁵
- tympanomalleolar, anterior, 924
- posterior, 924
- Folia of the cerebellum, 770
- Folium cacuminis, 770, 772
- vermis, 770, 772
- Follicle, hair-, 951-953
- Follicles, lymphoid, of the conjunctiva, 910
- Folliculus pili, 951-953
- Foot-plate of the stapes, see "Base of the stapes"
- Foramen cæcum (medullæ oblongatæ), 764, 765, 774
- diaphragmatis sellæ, 804
- interventriculare [Monroi], 763, 764, 776, 781, 783, 793
- of Majendie (foramen Magendii), 767, 802
- of Monro, 763, 764, 776, 781, 783, 793
- occipital, inferior, see "Foramen magnum"
- superior (or "notch of the tentorium"), 805, 860, and App., note ⁴¹²
- singulare, 932, 934, 935
- Formatio reticularis, 786
- alba, 786
- grisea, 786-788
- Fornix, body of the, 764, 781, 783, 785, 795
- of the brain (fornix cerebri), 763, 764, 781, 783, 792, 794, 795, 808
- bulb of the, see "Corpus albicans"
- of the conjunctiva, inferior (fornix conjunctivæ inferior), 907, 908, 910
- superior (fornix conjunctivæ superior), 907, 910, 911
- * of the lachrymal sac (fornix sacci lacrimalis), 912, 913
- pillar of, see "Pillar of the fornix"

Fossa or fossae:

- of the antihelix *fossa triangularis*, 900, 903, and App., note ²⁰
 - of the antihelix *fossa antihelica*, 900, 901, and App., note ²⁰
 - cerebri lateralis (Sylvii), 752, 753
 - ocular, 901 and note
 - of the helix, 901
 - hyaloides, 900
 - interpericardialis (Tarini), 754, 755, 774, 759-760
 - nasal, 941-943
 - reniform, 930, 932, 933, 935
 - rhomboidalis, see "Ventricle, fourth"
 - rhomboides, 752, 753, 754, 755, 756, 757
 - pars inferior, 756, 757
 - intermedia, 756, 757
 - superior, 756, 757
 - of Rosenmüller, 909, 946
 - sacci lacrimales, 913
 - subarcuata, 935
 - of Tarini, 754, 755, 774, 759-760
 - triangularis, 900, 903
- Fossula of the fenestra ovalis**, 923, 933
- rotunda, 923, 927, 933, 934
- fenestra cochleae**, 923, 927, 933, 934
- vestibuli, 923, 933
- ovalis**, 923, 933
- rotunda, 923, 927, 933, 934
- Fovea centralis**, 802, 808
- of the fourth ventricle, inferior, 766
 - superior, 766, 767
 - hemieliptica, 930, 931, 933
 - hemispherica, 930, 931, 933
 - inferior *fossae rhomboidales*, 768
 - superior *fossae rhomboidales*, 768, 767
- Foveola coccygea**, 955
- Frænulum lingulae**, 771
- transverse, of the pineal body, see "Commissure of the habenulae"
 - veli, 767
- Frenulum veli medullaris anterioris**, 767
- Fundus of the eye**, 898
- of hair-follicle (*fundus folliculi pilii*), 952
 - of the internal auditory meatus (*fundus meatus acustici interni*), 930, 932, 933, 935
- Funiculi medullae spinalis** (anterior, lateralis, posterior), 752-754, 765, 766, 768, 796
- of peripheral nerves, App., note ²⁰
- Funiculus cuneatus**, 752-754, 766, 768, 769, 796
- gracilis, 752-754, 766, 768, 769, 796
 - solitarius, 769, 766, 767
 - teres, 768, 767, and App., note ²⁰
- Furrow**, see "Sulcus," "Fissure," and "Groove"
- Furrows, flexion**, 950
- of the skin, 950, 951

G.

- Galen, great vein of**, 784, 789, 791
- veins of**, 764, 784, 805
- Gangliated cord**, see "Sympathetic"
- plexus, ciliary**, 894, 896, and App., note ²⁰
- Ganglion or ganglia:**
- Andersch's, see "Ganglion, petrosal"
 - of Arnold, see "Ganglion, otic"
 - cardiacum (Wrisbergi), 887
 - cervical, inferior (*ganglion cervicale inferius*), 816, 878, 884, 887
 - middle (*ganglion cervicale medium*), 816, 878, 884, 887
 - of the pneumogastric nerve, see "Ganglion of the trunk"
 - superior (*ganglion cervicale superius*), 816, 817, 859, 874, 876, 878, 884, 886, 887
 - cervicale vagi, see "Ganglion of the trunk"
 - ciliary (*ganglion ciliare*), 858, 859, 861, 886
 - long or sensory root (*radix longa*), 861, 886
 - middle or sympathetic root (*radix sympathica*), 886

Ganglion or ganglia:

- ciliary (short or motor root *radix brevis*), 860, 860, 876
 - cochlear, ganglion coccygeum impar, 858, 885
 - cochlear, 880, 889
 - collateral of Gaskell, see "Ganglia of the plexuses of the sympathetic"
 - diaphragmatic, 880, 889
 - Ehrenmiller's, see "Ganglion, jugular"
 - of the fifth nerve, see "Ganglion, Gasserian"
 - Gasserian, 769, 850-864, 880
 - geminate of the facial nerve (*ganglion geniculi*), 873, 860, 869, 874, 937
 - of the great sympathetic cord, 810, 812, 884, 885
 - of the habenula, 791, 794, 796
 - impar, 856, 885
 - jugular of the glossopharyngeal nerve, 873, 876, and App., note ²⁰
 - of the vagus nerve, see "Ganglion of the pneumogastric nerve, upper"
 - jugulare nervi vagi, 769, 858, 860, 872, 873, 876
 - lateral, 810, 812, 884, 885
 - lenticular, see "Ganglion, ciliary"
 - lower, of the pneumogastric nerve, 872-874, 876, 878
 - lumbar ganglia lumbalia, 885, 889, 890
 - Meckel's, see "Ganglion, sphenopalatine"
 - mesenteric, superior (*ganglion mesentericum superius*), 888, 889
 - nasal, see "Ganglion, sphenopalatine"
 - nervi optici, 899, note
 - nodosum, 872-874, 876, 878
 - ophthalmic, see "Ganglion, ciliary"
 - otic ganglion oticum, 858, 859, 867
 - sympathetic root (*radix sympathica*), 867
 - petrosal, ganglion petrosum, 769, 858, 866, 876
 - phrenic ganglia phrenica, 888, 889
 - of the plexuses of the sympathetic (*ganglia plexuum sympathicorum*), 888
 - of the pneumogastric nerve, lower (*ganglion of the trunk*), 872-874, 876, 878
 - upper (*ganglion of the root*), 769, 858, 866, 872, 873, 876, and App., note ²⁰
 - of the posterior root, see "Ganglion, spinal"
 - prevertebral (of Gaskell), see "Ganglia of the plexuses of the sympathetic"
 - retinae, 899, note
 - sacral ganglia sacralia, 885, 890
 - semilunar (*ganglion semilunare Gasserii*), 888, 889
 - sphenopalatine (*ganglion sphenopalatinum*), 858, 859, 861-863, 947
 - spinal (*ganglion spinale*), 753, 757-759, 810-812
 - spiral, of the cochlea (*ganglion spirale cochleae*), 769, 939
 - splanchnic (*ganglion splanchnicum*), 884
 - submaxillary (*ganglion submaxillare*), 859, 864, 867
 - sympathetic root (*radix sympathica*), 864
 - superius nervi glossopharyngei, 873, 876
 - sympathetic (*ganglia trunci sympathici*), 810, 812, 884, 885
 - thoracic (*ganglia thoracalia*), 816, 884, 887
 - trunci sympathici, 810, 813, 884, 885
 - of the trunk of the pneumogastric nerve, 872-874, 876, 878
 - vertebral, 810, 812, 884, 885
 - vestibular (*ganglion vestibulare*), 769, 858, 936, 939
 - of Wrisberg, 887 and App., note ²⁰
- Ganglion cells**, see "Nerve cells"
- Gasser, ganglion of**, 769, 858-864, 868
- Geniculate body**, see "Body, geniculate"
- Geniculum nervi facialis**, 869, 919
- Genu** (see also "Knee"):
- capsulae internae, 794
 - corporis callosi, 777, 780-783, 794, 795, 808

Genu of the corpus callosum, 777, 780-783, 794, 795, 808
 of the facial nerve, inner, 769, 787
 outer, 869, 919
 (internum) nervi facialis, 769, 787

Gland or glands:
 ceruminous, 920
 lachrymal, 860, 862, 902, 903, 907, 945, and App.,
 note ⁵⁴⁶
 inferior, 906, 910, 911, and App., note ⁵⁰³
 superior, 906, 910, 911, and App., note ⁵⁰³
 Meibomian, 910, 913
 of Moll, 910
 Pacchionian, see "Bodies, Pacchionian"
 sebaceous, 910, 952, 953
 sudoriferous, 910, 950, 951, 953
 tarsal, 910, 913
 posterior, 910

Glandula *vel* glandulae:
 ceruminosae, 920
 ciliares [Moll], 910
 lacrimalis, 860, 862, 902, 903, 907, 945
 inferior, 906, 910, 911
 superior, 906, 910, 911
 mucosae [Krause], 910
 sebaceae, 910, 952, 953
 sudoriferae, 910, 950, 951, 953
 tarsalis [Meibomi], 910, 913

Globe of the eye, 892, 902, 904, 905, 909, 910
 development of, 915, 916

Globus pallidus, 766, 790, 792-797

Glomeruli arteriosi cochleae, 939, 940

*Glomerulus, arterial, of the cochlea, 939, 940, and App.,
 note ⁵⁰⁰
 * choroidal, 781 and note, 784, 791, 794

Glomus chorioideum, 781, 784, 791, 794

*Golgi's cell, 756 and App., note ⁵⁴⁰

Goll, tract of, 756 and App., note ⁵⁴⁸

Gowers, tract of, 756 and App., note ⁵⁴⁸

Granulationes arachnoideales [Pacchioni], 779, 802

Granulations, Pacchionian, see "Bodies, Pacchionian"

Gratiolet, optic radiation of, 791, 794, 798

*Grey portion of the hypothalamus, 792 and App., note ⁴⁴⁸

*Groove (see also "Fissure," "Furrow," and "Sulcus"):
 * ampullary, 938 and App., note ⁵⁴³
 anterolateral, 753, 755, 812
 of the basilar artery, median, 765, 787
 for the cartilaginous portion of the Eustachian
 tube, 929
 intermediate, anterior, 753
 posterior, 753, 755, 768
 lachrymal, 912, 913
 lateral (of the mid-brain), 766, 788, 789
 limiting, of the floor of the fourth ventricle (sulcus
 limitans fossae rhomboideae), 768, 787
 marginal, of the nail-bed, 956
 median, of the fourth ventricle, 768, 787
 posterior, 752, 753, 755
 oculomotor, 764, 765
 olfactory, 914
 posterolateral, 753, 755, 768
 of the promontory, 927, 930, and App., note ⁵²⁸
 spiral, 939

Grooves of the matrix of the nail, 956

Ground fibres of Flechsig, anterior, 756, 757, and App.,
 note ⁵⁴⁷
 lateral, 756, 757, and App.,
 note ⁵⁴⁷

Gudden, commissure of, 793

Gyrus or gyri:
 angular (gyrus angularis), 777
 breves insulae, 779, 780
 callosal, see "Gyrus cinguli"
 central, anterior (gyrus centralis anterior), 777, 778,
 800
 posterior (gyrus centralis posterior), 777, 778,
 800
 of the central lobe, 779, 780, 793
 cerebelli, 770
 cerebri, 775, 777, 778
 cinguli, 777, 783, 785, 793, 795, 800, and App., note ⁵⁰⁰

Gyrus or gyri:
 concealed, 779 and note
 deep, 779 and note
 dentate, 763, 782, 783, 785, 791, 795
 fornicatus, 777, 783, 785, 793, 795, 800, and App.,
 note ⁵⁰⁰
 frontal, ascending, 777, 778, 800
 first or superior, 777, 778, 790, and App.,
 note ⁵³⁸
 second or middle, 777, 778
 third or inferior, 777, 779, 800
 frontalis inferior, 777, 779, 800
 medius, 777, 778
 superior, 777, 778, 790
 fusiformis, 775
 hippocampal, 765, 775 and note, 783, 785, and App.,
 note ⁵⁰⁰
 hippocampi, 765, 775, 783, 785
 insulae, 779, 793
 of the island of Reil, 779, 780, 793
 lingualis, 775, 777, 783
 long, of the central lobe, 779, 780
 longus insulae, 779, 780
 * occipital, lateral, 777 and App., note ⁵³⁸
 * superior, 777, 778, and App., note ⁵³⁸
 occipitales laterales, 777
 superiores, 777, 778
 orbital (gyri orbitales), 775, 777
 inner, see "Gyrus rectus"
 parietal, ascending, 777, 778, 800
 postcentral, 777, 778, 800
 postparietal, 777, note
 precentral, 777, 778, 800
 profundus, 779
 rectus, 765, 775, 793, and App., note ⁵³⁷
 short, of the central lobe, 779, 780
 straight, 765, 775, 793, and App., note ⁵³⁷
 subcalcarine, see "Gyrus, temporal, fifth"
 subcallosal (gyrus subcallosus), 764, 777, 793
 sunken, 779 and note
 supramarginal (gyrus supramarginalis), 777
 temporal, fifth, 775 and note, 777, 783
 first or superior, 777, 779
 fourth, 775 and note
 second, 777
 third, 775, 777
 transverse (gyri temporales transversi), 779,
 780
 temporalis inferior, 775, 777
 medius, 777
 superior, 777, 779
 uncinate, 775, note

H.

Habenula, 782, 794, and App., note ⁵⁰⁵

Hair, 952

Hair or hairs:
 of the external auditory meatus (*tragi), 920 and
 note
 of the head, 953
 of the moustache, 952
 pubic, 951
 shaft or stem of, 952, 953
 small and rudimentary, of the general surface of the
 body, 910, 951, 953, and App., note ⁵⁰³

Hair-bulb, 952, 953, and App., note ⁵⁰⁰

Hair-follicle, 951-953

Hair-knob, 952, 953, and App., note ⁵⁰⁰

Hair-stream, 955 and App., note ⁵⁰⁴

Hair-whorl, 955 and App., note ⁵⁰⁴

Hammer-bone, 869, 918, 925, 926, 928

Hamulus of the osseous spiral lamina (hamulus laminae
 spiralis), 934, 936, 939

Handle of the malleus or hammer-bone, 867, 922-925, 928

Hasner's valve, 913

*Head of the caudate nucleus, 766, 790, 793-795
 of the corpus striatum, 780-782, 784
 of the malleus or hammer-bone, 922, 924-926

Head of the posterior grey column, 754 and note, 755, 786 and note, also App., note ³³⁰
 horn, 786 and note
 of the stapes, 925
 Hearing, organ of, 917-940
 Helicotrema, 934, 936, 937, 939
 Helix, 920, 921, 923
 spine of the, 920, 921
 Hemisphærium cerebelli, 762, 764, 770-774
 cerebri, 762, 763, 777, 778
 Hemisphere, cerebellar, 762, 764, 770-774
 cerebral, 762, 763, 777, 778
 Henle's layer, 952
 sheath, App., note ³³⁶
 Hensen, canalis reuniens of, 936
 Hiatus semilunaris, 944, 945, 947
 subarcuatus, 938 and note
 Highmore, antrum of, 918, 944-947
 Hilum of the dentate nucleus, 772
 of the olivary nucleus, 786
 Hilus nuclei dentati, 772
 olivaris, 786
 Hippocampus, 763, 781, 782, 785, 791, 794, 795
 major, 763, 781, 782, 785, 791, 794, 795
 minor, 781, 782, 791, 794
 Hook of the hippocampal gyrus, 763, 765, 775, 782
 Horn of the lateral ventricle of the brain, anterior, 781, 782, 784, 790, 792-794
 middle, lateral, or descending, 781, 782, 784, 785, 790-792, 794, 795
 posterior, 781, 782, 784, 791, 794
 Horns of the grey matter of the spinal cord, see "Columns of the spinal cord, grey," and App., note ³³⁰
 Huxley's layer, 952
 Hyaloid membrane, 900
 Hypophysis, 760, 761, 764, 774, 776, 802, 808
 cerebri, 760, 761, 764, 774, 776, 802, 808
 *Hypothalamus, 764, 785, and App., note ³³⁰

I.

*Impression, petrous (impressio petrosa cerebri), 783
 Incisura *vel* incisuræ:
 anterior (auriculæ), 920
 cartilaginæ meatus auditorii externi [Santorini], 921, 922
 cerebelli anterior, 770
 posterior, 770-772
 intertragica, 920
 marsupialis, 770, note
 Santorini, 921, 922
 semilunaris, 770, note
 tentorii, 805, 860
 terminalis, 921, 922
 auris, 921, 922
 tympanica [Rivini], 923, 924
 Incus, 869, 925, 926, 932
 Infundibulum, 761, 763-765, 774, 776, 792, 808
 (of the brain), 761, 763-765, 774, 776, 792, 808, and App., note ³³¹
 ethmoidale, 944, 945
 (of the nasal fossæ), 944, 945
 Insula, 779, 790, 792-795
 Integumentum commune, 949
 Interbrain, 760-762
 Internal capsule, 766, 790-797, 900
 ear, 918, 930-940
 Interolivary layer of the fillet, 786
 Intumescencia cervicalis, 752, 755
 ganglioformis Scarpæ, see "Ganglion, vestibular"
 lumbalis, 752
 Iris, 892-898, 908, 916

Iris, ciliary and pupillary zones of, 896 and App., note ⁴⁸⁷
 Island of Reil, 779, 790, 792-795
 Isthmus cartilaginæ auris, 920, 921
 of the ear cartilage, 920, 921
 encephali, see "Mid-brain" and App., note ³³⁰
 of the Eustachian tube, 928
 of the gyrus fornicatus (isthmus gyri fornicati), 775, 783
 of His, 760, 761, 762, and App., note ³³⁰
 rhombencephali, 760-762, 788
 tubæ auditivæ, 628
 Iter a tertio ad quartum ventriculū, 761, 763, 764, 776, 783, 791

J.

Jacobson, cartilage of, 943 and App., note ³³³
 eminence of, 943 and App., note ³³¹
 Joint, incudostapedial, 925
 malleo-incudal, 925

K.

Knee, see "Genu"
 of the internal capsule, 794 and App., note ⁴⁰⁴

L.

Labium sulcatum, 939, note
 tympanicum, 939
 vestibulare, 939
 Labyrinth, bony, 918, 919, 930-935
 of the ethmoid bone, 904, 945
 membranous, 936
 osseous, 918, 919, 930-935
 Labyrinthus ethmoidalis, 904, 945
 membranaceus, 936
 osseus, 918, 919, 930-935
 Lachrymal apparatus, 911-913
 canaliculus, gland, etc., see "Canaliculus, lachrymal," "Gland, lachrymal," etc.
 fissure, 914
 reservoir, 908, 910, 912, 913
 Lacrimal, see "Lachrymal"
 Lacus lacrimalis, 908, 910, 912, 913
 Lagena, 936 and App., note ³³⁵
 Lamellæ of Pacinian corpuscle, 749
 Lamina or laminæ:
 affixa, 784, 785
 basalis (chorioideæ), 895
 basilaris, 939
 of the cerebellum, 770
 choriocapillaris, 895 and App., note ⁴⁸⁶
 chorioidea epithelialis, 763, 767, 785
 cinerea, 764, 776, and App., note ³³⁷
 cornea, 784, 785, and App., note ³³⁹
 cribrosa of the sclerotic coat (lamina cribrosa scleræ), 899
 elastic, anterior (lamina elastica anterior Bowmani), 748, 893
 posterior (lamina elastica posterior Descemeti), 893
 fusca (scleræ), 892, 894, 895
 homogeneous, anterior, 748, 893
 medullary, of the cerebellum (laminæ medullares cerebelli), 764, 772
 internal, of the optic thalamus (laminæ medullares thalami), 785, 794
 of the lenticular nucleus (lamina medullaris nuclei lentiformis), 793
 *modioli, 934 and App., note ³³⁷
 perforated, see "Space, perforated"
 quadrigeminal (lamina quadrigemina), 764, 775, 776, 802, 808
 *rostral (lamina rostralis), 776 and App., note ³⁸⁷
 of the septum lucidum (lamina septi pellucidi), 781, 784

- Lamina or laminae:**
 spiral, membranous (*lamina spiralis membranacea*), 932, 936, 937
 osseous (*lamina spiralis ossea*), 930, 932-937, 939
 secondary (*lamina spiralis secundaria*), 932, 934, 935
 suprachorioidea, 893-895 and App., note ⁴⁸⁶
 terminalis, 764, 776
 tragi, 921, 922
 vasculosa (*chorioideæ*), 895 and App., note ⁴⁸⁶
 vitrea, 895 and App., note ⁴⁸⁶
- Lancisi**, nerves of, 780, 793
- Lanugo**, 910, 951, 953, and App., note ⁵⁰³
- Lateral mass of the ethmoid bone**, 904, 945
- Layer or layers:**
 choriocapillary, 895 and App., note ⁴⁸⁶
 epithelial, of the velum interpositum and choroid plexuses, 763, 767, 785, and App., note ³⁷⁴
 of the fillet, App., note ⁴⁰⁰
 Henle's, 952
 horny, 950, 956
 Huxley's, 952
 hyaline, of the hair-follicle, 952 and App., note ⁵⁰²
 interolivary, of the fillet, 786
 Malpighian, 950, 956
 of the membrana tympani, cutaneous, 925
 mucous, 925
 nuclear (of the medulla oblongata), 767, 772, and App., note ³⁷⁵
 optic, App., note ⁴⁰⁰
 papillary (of the corium), 950, 956
 reticular, of the corium, 950
 of the retina, 899
 molecular layer, inner, 899
 outer, 899
 nerve-cell layer, 899
 nerve-fibre layer, 899
 nuclear layer, inner, 899
 outer, 899
 pigment-cell layer, 899
 rods and cones, 899
 (For other names, see App., note ⁴⁹⁰, and footnotes to p. 899)
 vascular, of the choroid, 895 and App., note ⁴⁸⁶
 white, deep, 789
 superficial (of the corpora quadrigemina), 788, 789, and App., note ⁴⁸⁰
- Lemniscus lateralis** (*acusticus*), 772, 788, 791, 796
 medialis (*sensitivus*), 786-789, 796, 797
- Lens capsule**, see "Capsule of the lens"
- crystalline** (*lens crystallina*), 892, 893, 895, 898, 900, 901
 anterior surface (*facies anterior*), 900, 901
 posterior surface (*facies posterior*), 900, 901
 fibres, 900
 vesicle, 914, 915
- Levator cushion**, 928, 944, and App., note ⁵²⁷
- Ligament**, annular, of the base of the stapes, 926
 of the auricle, see "Ligament of the pinna"
 of the cochlea, spiral, 936, 939
 of the incus (posterior), 926 and App., note ⁵²¹
 of the malleus, anterior, 922
 external, 925
 superior or suspensory, 923-926
 palpebral, external, 909, 911
 internal, 909, 912, 913
 of the pinna, anterior, 921
 posterior, 922
 superior, 921
 of the spinal cord, central, 752-754, 758
 spiral, of the cochlea, 936, 939
 suspensory, of the lens, 892, 893, 991, and App., n. ⁴³⁰
 tarsal, external, 909, 911
 internal, 909, 912, 913
 tympanomalleolar, anterior, 924
 posterior, 924
- Ligamentum annulare baseos stapedis**, 926
 auriculare anterius, 921
 posterius, 922
 superius, 921
- Ligamentum denticulatum**, 755, 759, 873
 incudis posterius, 926
 mallei anterius, 922
 laterale, 925
 superius, 923-926
 palpebrale laterale, 909, 911
 mediale, 909, 912, 913
 pectinatum iridis, 893
 spirale cochleæ, 936, 939
- † **Ligula**, 767, 768, 773, and App., note ³⁶²
- Limb of the internal capsule**, anterior, 794 and App., note ⁴⁰⁴
 posterior, 794 and App., note ⁴⁰⁴
- Limbus corneæ**, 892, 893, 908
 of the eyelid, anterior, 908, 910
 posterior, 908, 910
 membranæ tympani, 924
 palpebralis (anterior, posterior), 908, 910
- Limen insulæ**, 775, 779
 nasi, 944
 vestibuli, 944
- Limiting membrane**, see "Membrana limitans"
- Line of Baillarger**, outer, 785
 vertico-auriculo-mental, 811, 858
 of Vicq d'Azyr, 785
 of vision, 892
- Linea visus**, 892
- Lines of cleavage**, 954 and App., note ⁵⁰⁴
- Linguetta laminosa**, see "Lingula of the cerebellum"
- Lingula of the cerebellum** (*lingula cerebelli*), 771-773
- Lip**, tympanic, 939
 vestibular, 939
- Lobe or lobes:**
 anterior (of the cerebellum), App., note ³⁸¹
 biventral, 770, 771
 central (of the cerebellum), 770-772
 (of the cerebrum), 779, 790, 792-795
 of the cerebellum, 770, 771, and App., notes ³⁸⁰ to ³⁸³
 of the cerebrum, 776, 777
 of the (external) ear, 920, 922
 frontal, 763, 776, 780
 limbic, App., note ³⁹⁰
 occipital, 763, 776, 798, and App., note ³⁹⁸
 olfactory, 761-763
 optic, see "Corpora quadrigemina," also note ⁵ to p. 760
 parietal, 763, 776, 796, 797
 of the pituitary body, anterior, 760, 764, 808
 posterior, 764, 808
 posterior, 770, note, 771, note
 posterosuperior, 770, 771
 quadrate, App., note ³⁸¹
 quadrilateral, 770 and App., note ³⁸¹
 slender, App., note ³⁸⁰
 subpeduncular, see "Flocculus"
 temporal, 763, 776, 796
- Lobule or lobules:**
 central, 770-772
 of the cerebellum, 770, 771, and App., notes ³⁸⁰ to ³⁸²
 cuneate, 777, 783, 795, 798
 cuneiform, 770, note, 771, note
 digastric, 770, note, 771, note
 (of the external) ear, 920, 922
 fusiform, 775, note
 lingual, see "Gyrus temporal, fifth"
 lunated, App., note ³⁸¹
 marginal, 770, note, 771, note
 oval, 777, 800, and App., note ³⁸⁸
 paracentral, 777, 800, and App., note ³⁸⁸
 parietal, inferior, 777 and note, 778
 superior, 777, 778
 postcentral, of the insula, 779, 780
 precentral, of the insula, 779, 780
 quadrate, of the cerebrum, 777
 quadrilateral, 770 and App., note ³⁸¹
 semilunar, inferior, 770, 771
 superior, 770

- Lobulus auriculæ**, 920, 922
 biventer, 770, 771
 centralis, 770-772
 paracentralis, 777, 800
 parietalis (inferior, superior), 777, 778
 quadrangularis, 770
 semilunaris inferior, 770, 771
 superior, 770
- Lobus frontalis**, 763, 776, 780
 gracilis, App., note ³⁸⁰
 (hypophyseos), anterior, 760, 764, 808
 posterior, 764, 808
 lunatus, App., note ³⁸¹
 occipitalis, 763, 776, 798
 olfactorius, 761-763
 parietalis, 763, 776, 796, 797
 temporalis, 763, 776, 796
- Locus caeruleus**, 768
 niger, see "Substantia nigra"
 perforatus posticus, see "Space, perforated, posterior"
- Longitudinal bundle or fasciculus**, see "Bundle, longitudinal"
- Lunula of the finger-nail (lunula unguis)**, 956
- Luys, nucleus of**, 785, 791, 792, 797, and App., note ⁴⁰²
- Lymphoid follicles of the conjunctiva**, 910
- Lyra**, 784, 795

M.

- Macula acustica of the sacculi (macula acustica sacculi)**, 936, 939
 of the utricle (macula acustica utriculi), 936, 938
 cribrosa inferior, 930, 931, 933, 935, and App., note ⁵³³
 middle, 930, 931, 933, and App., note ⁵³²
 superior, 930, 931, 933, 935, and App., n. ⁵³¹
- Majendie, foramen of**, 767, 802
- Malleus**, 869, 918, 925, 926, 928
- Malpighian layer**, 950, 956
- Mantle**, 760 and note, 761
- Manubrium mallei**, 867, 922-925, 928
- Margin of the iris**, ciliary, 894, 896
 pupillary, 896, 897, 916
 of the membrana tympani, 924
 of nail, 956
- Margo ciliaris iridis**, 894, 896
 pupillaris iridis, 896, 897, 916
 unguis (lateralis, liber, occultus), 956
- Marrow, spinal**, see "Cord, spinal"
- Mass, lateral, of the ethmoid bone**, 904, 945
- Massa, intermedia**, 764, 776, 782, 792, 794
- Mastoid antrum**, 919, 926, 927, 932
- Matrix of nail**, 956
 unguis, 956
- Matter, grey, central, of the aqueduct**, 788, 789, 791
 white, of the cerebellum, 772, 773, 776
 of the cerebrum, see "Centrum ovale"
- Maxillary sinus**, 918, 944-947
- Meatus acusticus externus**, 921, 931
 internus, 926, 932-935, 937, 939
- † auditorius externus**, 918-920, 922, 928
 † pars cartilaginea, 922, 923, 928
 † ossea, 922, 923
- auditory, external**, 918-922, 928, 931
 cartilaginous portion, 922, 923, 928
 osseous portion, 922, 923
 internal, 926, 932-935, 937, 939
- nasi communis**, 905, 945, 947
 inferior, 903, 913, 944, 945
 medius, 913, 944, 945, 947
 superior, 944, 945
- † supremus (var.)**, 945
 of the nose, common, 905, 945, 947
 fourth, 945 and App., note ⁵⁶⁷
 inferior, 903, 913, 944, 945
 middle, 913, 944, 945, 947
 superior, 944, 945
 supremus, 945 and App., note ⁵⁵⁷
- † Meditullium**, 780, 790
- Medulla oblongata**, 761-769, 786, 787, 808, 873
 spinalis, 752-755, 808
- Medullary centre of the cerebellum**, 772, 773, 776
 of the cerebrum, see "Centrum ovale"
 sheath, 746 and App., note ³¹⁹
- Meibomian glands**, 910, 913
- Membrana basilaris**, 939
 flaccida, 922, 924, 925
 hyaloidea, 900
 limitans (externa, interna), 899
 mucosa nasi, 947, 948
 obturatoria (stapedis), 925, 926
 propria (of the membrana tympani) 925 and App., note ⁵¹⁷
 pupillaris, 916
 tympani, 918, 919, 922, 924-928, 932
 secundaria, 926, 937
 vestibularis [Reissneri], 939
- Membrane or membranes:**
 basilar, 939
 of Bowman, 748, 893
 of the brain, 802-808
 of Bruch, 895 and App., note ⁴⁸⁶
 of Demours, 893
 of Descemet, 893
 of the fenestra ovalis, see "Ligament, annular, of the base of the stapes"
 rotunda see "Membrane, tympanic, secondary"
 hyaloid, 900
 limiting, see "Membrana limitans"
 mucous, of the nose, 947, 948
 obturator, of the stapes, 925, 926, and App., note ⁵¹⁹
 pituitary, 947, 948
 pupillary, 916
 of Reissner, 939
 Schneiderian, 947, 948
 secondary, of the tympanum, App., note ⁵³³
 Shrapnell's, see "Membrana flaccida"
 of the spinal cord, 758, 759
 suprachoroidal, 893-895 and App., note ⁴⁸⁶
 tarsal, see "Fascia, palpebral"
 tympanic, 918, 919, 922, 924-928, 932
 secondary, 926, 937, and App., note ⁵³²
- Meninges of the brain (meninges encephali)**, 802-808
 of the spinal cord (meninges spinales), 758, 759
- Meridian of the eyeball**, horizontal, 892
 sagittal, 892
 vertical, 892
- Meridiani**, 892
- Mesencephalon**, 760-762, 764, 778, 788, 799
- *Metathalamus**, 760, 761, and App., note ⁵⁶⁴
- Metencephalon**, 760-762
- Meynert's bundle**, 791
- Mid-brain**, 760-762, 764, 778, 788, 789
- Middle ear**, 918, 925-931
- Modiolus**, 934, 936, 937, 939, and App., note ⁵³⁷
- Moll's glands**, 910
- Monro, foramen of**, 763, 774, 776, 781, 783, 793
- Monticulus (cerebelli)**, 770, 772
- Moterial end-organ**, 749 and note, 750
- Moustache hair**, 952
- Mucous membrane**, see "Membrane, mucous"
- Muscle or muscles:**
 of the antitragus, 921
 arrector pili, 951-953
 attollens auriculam, 921
 attrahens auriculam (deep layer), 921 and App., note ⁵¹⁰
 of the auricles, 921
 auricularis anterior (deep layer), 921 and App., note ⁵¹⁰
 posterior, 921
 superior, 921
 ciliary, 892-897, 901
 circular fibres (circular ciliary muscle), 893
 radial or meridional fibres (radial ciliary muscle), 893
 erector pili, 951-953

- Muscle or muscles:**
 of the helix, large, 921
 small, 921
 levator palpebræ superioris, 868, 902, 903, 906, 907, 910
 oblique, of the auricle, 921
 inferior (of the eyeball), 868, 902, 903, 905-907, 909
 superior (of the eyeball), 868, 902-904, 906, 907
 orbicularis palpebrarum, 868, 903, 906, 910, 911, 913
 of the orbit, 902-907
 orbitalis, see "Muscle, sphenomaxillary," and App., note ⁴⁸⁸
 palpebral, superior, 910 and App., note ⁸⁰⁴
 rectus (of the eyeball), external, 868, 892, 902-907, 911
 inferior, 868, 892, 902, 903, 905-907
 internal, 868, 892, 902-907
 superior, 868, 892, 902-904, 906, 907
 retrahens auriculam, 921
 of Riolan, 909, 910, and App., note ⁸⁰¹
 salpingopharyngeus, 928
 sphincter of the pupil, 893, 896
 stapedius, 923, 925-927
 subtarsalis, 909, 910, and App., note ⁸⁰¹
 tensor chorioideæ, see "Muscle, ciliary"
 tympani, 867, 924-926, 928
 of the tragus, 921
 transverse, of the auricle, 921
- Musculus vel musculi:**
 antitragicus, 921
 arrectores pilorum, 951-953
 auricularis anterior (profundus), 921
 posterior, 921
 superior, 921
 ciliaris, 892-897, 901
 fibræ circulares [Muelleri], 893
 meridionales [Bruckei], 893
 ciliaris Riolani, 909, 910
 helcis (major, minor), 921
 levator palpebræ superioris, 868, 902, 903, 906, 907, 910
 obliquus auriculæ, 921
 (oculi) inferior, 868, 902, 903, 905-907, 909
 superior, 868, 902-904, 906, 907
 oculi, 902-907
 orbicularis oculi, 903, 910
 pars lacrimalis, 910, 913
 orbitalis, 868
 palpebralis, 913
 orbitalis, 868, 906
 rectus (oculi) inferior, 868, 892, 902, 903, 905-907
 lateralis, 868, 892, 902-907, 911
 medialis, 868, 892, 902-907
 superior, 868, 892, 902-904, 906, 907
 salpingopharyngeus, 928
 sphincter pupillæ, 893, 896
 stapedius, 923, 925-927
 subtarsalis, 909, 910
 tarsalis (superior), 910
 tensor chorioideæ, see "Muscle, ciliary"
 tympani, 867, 924-926, 928
 tragicus, 921
 transversus auriculæ, 921
- Myelencephalon, 760-762**

N.

- Nail, 956
 Nail-bed, 956
 Nail-fold, 956
 Nail-wall, 956
 Nares, 942, 946, 948
 anterior, 942, 946, 948
 Nasal fossæ, 941-948
 Nasopharyngeal part of the lateral wall of the nasal fossæ, 944, 946

- Nasopharynx, 914
 Nasoturbinal, see "Agger nasi"
 Nasus externus, 942
 Nates, see "Quadrigenal body, superior," and App., note ³⁷²
 Neck of hair-follicle, 952
 of the malleus or hammer-bone, 823-825
 of the posterior grey column, 754 and note, 755 and note, 786 and note, and App., note ³³⁹
 horn, see "Cervix cornu posterioris"
 of the stapes, App., note ⁵¹⁸
- Nerve or nerves:**
 of the abdominal viscera, 888, 889
 abducent ocular, 765, 774, 799, 803, 861, 868, 869, 886, 903
 nucleus of, 769, 787, 799
 root of, 769, 774, 787, 860
 accessory, spinal, see "Nerve, spinal accessory"
 alveolar, inferior, see "Nerve, dental, inferior"
 superior, 859, 861, 862, 864
 ampullary, external, 935, 937
 posterior, 935-937
 superior, 935, 937, 938
 anococcygeal, 836, 852, 853, 856
 of Arnold, 868, 876
 auditory, 765, 773, 803, 807, 869, 918, 919, 936, 937, 939
 central tract of, 796 and note
 nucleus of, 787
 roots of, 768, 774, 787
 of the auricle, 818, 819, 864, 868, 870, 871
 auricular, anterior, 870, 871
 (branch of the pneumogastric nerve), 868, 876
 great, 816, 818, 819, 870, 871
 posterior, 869, 871
 auriculotemporal, 859, 864, 867, 869-871, 921, and App., note ⁴⁸⁹
 terminal branch, App., note ⁴⁸⁹
 axillary, 816, 821, 823
 buccal, 864-866, 871, 877
 (branch of the facial nerve), 871
 buccolabial (branches of the facial nerve), 871
 calcaneal, external, 844, 845, 849, 851
 internal, 843, 851
 cardiac (branch of the superior laryngeal nerve), 874, 877, 888
 cervical, inferior (branch of the pneumogastric nerve), 817, 872, 876, 878, 887
 superior (branch of the pneumogastric nerve), App., note ⁴²²
 inferior, 884, 887
 lowest, 884, 887, and App., note ⁴⁷²
 middle, 876, 884, 887
 superior or superficial, 874, 876, 884, 887
 thoracic (branch of the pneumogastric nerve), 820, 878, 887
 carotid (*i.e.*, ascending or carotid branch of the superior cervical ganglion), 816, 859, 874, 876, 884, 886
 external, 859, 884
 caroticotympanic, inferior, 868, 874, and App., note ⁴⁸³
 superior, see "Nerve, petrosal,
 deep, small"
 cavernous, of the penis, large, 890
 small, 890
 cervical, 803, 813, 816, 817, 876, 877
 anterior primary divisions, 816, 817
 posterior cutaneous offsets, 813
 primary divisions, 811, 813
 cervical (branches of the facial nerve), 818, 819, 871
 communicating, 816 and note
 descending, 817, 858, 877
 superficial, 816, 818, 819, 870, 871
 chorda tympani, 859, 863, 864, 867-869, 923
 ciliary, 861, 886, 894-896
 long, 861
 short, 861

Nerve or nerves:

- circumflex, 816, 821, 823
 - cutaneous branch, 824, 831
 - lower branch, 824, note, 831, note
- coccygeal, 836, 856, 858, 885
- cochlear, 936, 937, 939
 - nucleus and root, 769
- coeliac (branch of the pneumogastric nerve), 872
- common oculomotor, see "Nerve, oculomotor, common"
- communicans tibialis, 840, 842, 849
- of cornea, 748 and App., note ³²³
- cranial, 857-882
 - first, see "Nerve, olfactory"
 - second, see "Nerve, optic"
 - third, see "Nerve, oculomotor, common"
 - fourth, see "Nerve, trochlear"
 - fifth, see "Nerve, trigeminal"
 - sixth, see "Nerve, abducent ocular"
 - seventh (of Soemmerring), see "Nerve, facial" (of Willis), portio dura, see "Nerve, facial"
 - portio mollis, see "Nerve, auditory"
 - eighth (of Soemmerring), see "Nerve, auditory" (of Willis), first trunk, see "Nerve, glossopharyngeal"
 - second trunk, see "Nerve, pneumogastric"
 - third trunk, see "Nerve, spinal accessory"
 - ninth (of Soemmerring), see "Nerve, glossopharyngeal" (of Willis), see "Nerve, hypoglossal"
 - tenth, see "Nerve, pneumogastric"
 - eleventh, see "Nerve, spinal accessory"
 - twelfth, see "Nerve, hypoglossal"
- crural, anterior, 836-839, 858
 - (branch of the genitocrural nerve), 837, 838, 848, 851
- cutaneous, of the abdomen, anterior, 811, 814, 815
 - lateral, 814, 815
- brachial, anterior (branches of the internal cutaneous nerve), 830 and App., note ⁴³⁶
- external, of the arm, see "Nerve, musculo-cutaneous"
 - lower (branch of the musculo-spiral nerve), 824-826, 831, 835, and App., note ⁴³⁰
 - (of the thigh), 836-838, 848, 849, 858
 - upper (branch of the musculo-spiral nerve), 824, 825, 831, and App., note ⁴²⁹
- of the forearm and hand, see "Ulnar nerve, palmar cutaneous branch"
- of the gluteal region, 849
- of the hand, dorsal, see "Ulnar nerve, dorsal cutaneous branch"
- internal (of brachial plexus), 816, 821, 822, 830, 831, 833
 - anterior brachial cutaneous branches, 830 and App., note ⁴³⁶
 - anterior division, 822, 830, 833
 - posterior division, 822, 830, 831
- internal, small (of the arm), 822, 830, 831
 - (of the thigh), 837, note, 838, 848, 851
- of the leg, external, 840, 842, 848, 849, 851, and note ⁴ to p. 840
 - lateral, 840, note
- of the lower extremity, 844-851
- middle (of the thigh), 837 and note, 838, 848, 851
- of the neck (var.), 818, 819
- palmar (branch of the median nerve), 826-828, 830, 833

Nerve or nerves:

- cutaneous, of the surface of the nose, 865, 866, 871
- of the thorax, anterior, 810, 811, 814, 815
 - lateral, 810, 811, 813-815
- of the trunk, 813-815
 - posterior, 810 and note, 813
 - of the upper extremity, 830-835
- dental, inferior, 859, 863-865, 867
 - superior, 859, 861, 862, 864
- digastric, 869, 871
- digital, dorsal, of the foot, 844, 845, 848
 - of the hand, 835, 831, 833, 834
- palmar, collateral, 832-835 and App., note ⁴³⁴
 - common, 828, 832, 834, and App., note ⁴³⁴
 - branches to the palm of the hand, 833
- plantar, collateral, 846, 847, 850, and note top. 846
 - common, 846, 847, 850, and note to p. 846
- dorsal, 810-814, 858
 - anterior primary division, 810
 - lateral cutaneous branch, 810, 811, 814, 815
 - posterior cutaneous branch, 810, 813, 824
 - primary division, 810
- dorsal, of the clitoris, 853
- cutaneous, of the hand, see "Ulnar nerve, dorsal cutaneous branch"
- of the penis, 837, 852, 854-856, 890
- of the dorsum of the foot, 844, 845
- of the dura mater, 860
- of the external auditory meatus, 864, 869
- facial, 765, 773, 803, 818, 819, 859, 861, 863, 864, 866-874, 936, 937
 - crossed central tract of the, 800
 - nucleus of the, 769, 787, 800
 - root of the, 769, 774, 787, 800
- femoral, see "Nerve, crural, anterior"
- fibular communicating, 842, 849
- of the fingers, 833, 834
- of the forearm, 825-831
- frontal, 860, 861, 871, 906
- genital (branch of the genitocrural nerve), 814, 837, 838, 848, 851
- genitocrural, 836-838, 848, 856, 858
 - crural branch, 837, 838, 848, 851
 - genital branch, 814, 837, 838, 848, 851
- gingival, 862, 865
- glossopharyngeal, 774, 803, 817, 859, 868, 869, 872-878, 880, 881
 - nuclei of, 769, 787
 - root of, 769, 773, 774, 787, 876
- gluteal cutaneous (branches of small sciatic nerve), 840, 841, 849, 851
 - inferior, 840, 841
 - superior, 836, 840, 841
- gustatory, see "Nerve, lingual"
- haemorrhoidal, inferior, 841, 852, 853
 - middle, 836, 856, 890
 - superior, 890
- of the hand, 829, 831-834
- of the heart, 887
- hepatic, 872, 879
- hypoglossal, 774, 803, 807, 817, 876-878, 880, 882
 - crossed central tract of the, 800
 - nucleus of the, 769, 786, 800
 - root of the, 769, 774, 786, 800
- iliohypogastric, 814, 815, 836, 837, 858
 - hypogastric or abdominal branch, 814
- iliac branch, 815, 848, 851
- ilio-inguinal, 814, 836, 837, 848, 851, 858
- inframaxillary (branches of the facial nerve), 818, 819, 871
- infra-orbital, 859, 861, 862, 864-866
- infratrochlear, 859, 860, 866, 870, 871
- intercostal, 810-812, 814, 884
 - anterior cutaneous branches (thoracic and abdominal), 810, 811, 814, 815
 - lateral cutaneous branches (thoracic and abdominal), 810, 811, 813-815

Nerve or nerves:

- intercostal, abdominal, 810, note
- pectoral, 810, note
- intercostohumeral, 815, 822, 830
- interosseous (of the forearm), anterior, 827-829
- posterior, 825-828 and App., note 431
- (of the leg), 843
- of the isthmus of the fauces, 864, 867
- jugular, 874, 876, 878, and App., note 400
- labial, inferior, 866
- long, 853
- superior, 865, 866, 871
- lacrimal, 859, 860, 862, 911
- of Lancisi, 780, 793
- laryngeal, inferior or recurrent, 872, 875, 877-881, 887, and App., note 462
- anterior branch, 875, 881
- posterior branch, 875, 881
- superior, 858, 872, 874, 875, 877, 878, 880, 882, 887
- external laryngeal branch, 874, 876-878, 880, 887
- internal laryngeal branch, 875-877, 880, 881
- laryngopharyngeal, 876
- of the larynx, 875, 880, 881
- of the leg, 843-845
- lingual, 859, 863-865, 867, 877, 880, 882
- (branches of the glossopharyngeal nerve), 875, 881
- (branches of the lingual nerve), 880, 882
- motor, see "Nerve, hypoglossal"
- lumbar, 811, 813, 836, 858, 884
- posterior cutaneous offsets, 813
- malar (branches of the facial nerve), 866, 870, 871
- (branch of the temporomalar nerve), 862, 865, 870
- mammary, inner, 815 and note
- outer, 815 and note
- mandibular (branch of the facial nerve), 818, 866, 870, 871
- masseteric, 865 and App., note 464
- masticatory, 867
- maxillary, inferior, 806, 807, 858-865, 868, 877
- superior, 806, 807, 858, 860-864, 866
- median, 816, 821-823, 826-828, 832
- meningeal (branch of ophthalmic nerve), 860, 864
- (branches of spinal nerves), see "Nerves, sinuvertebral"
- middle, 860, 867, 868
- see also "Nerve, recurrent"
- mental, 859, 865, 866
- middle meningeal, 860, 867, 868
- of the muscles of the orbit, 799, 868
- musculocutaneous of the arm, 816, 821-823, 835
- (cutaneous portion), 821, 823, 826-828, 830, 833
- of the leg, 844, 848, 851
- external terminal branch, 844
- internal terminal branch, 844
- musculospiral, 816, 821-828, 830, 831, 833, 835
- lower external cutaneous branch, 824-826, 831, 835, and App., note 420
- upper external cutaneous branch, 824, 825, 831, and App., note 420
- to the mylohyoid muscle, 863, 865, 867
- nasal, 859-861, 863, 866, 886, and App., note 440
- of the nasal mucous membrane, 862, 863
- nasociliary, see "Nerve, nasal"
- nasopalatine, 862
- of the neck, 817-819, 874, 877, 878
- obturator, 836, 837, 839 and note, 851, 856, 858
- anterior portion (anterior obturator nerve), 839 and note
- cutaneous branch, 839, 848, 849, 851
- posterior portion (posterior obturator nerve), 839 and note
- occipital (branch of the facial nerve), 871
- great, 813, 818, 871

Nerve or nerves:

- occipital, small, 813, 816, 818, 819, 871
- third, 813 and note
- ocular, abducent, see "Nerve, abducent ocular"
- oculomotor, common, 764, 765, 774, 789, 799, 803-805, 859-862, 868, 886, 903, 905
- lower branch, 868, 886
- nucleus, 769, 789, 799
- root, 769, 789, 803
- upper branch, 860, 868, 886
- oculonasal, see "Nerve, nasal"
- oesophageal, 872, 877-881
- olfactory, 862, 863
- ophthalmic, 858, 860-862
- optic, 765, 766, 774, 803-807, 860, 861, 892, 897-899, 904, 907
- intracranial portion, 904
- nucleus of, 769 and App., note 378
- orbital portion of, 904
- primitive, 915
- orbital, 859, 862, 911
- palatine, 859, 862
- anterior or large, 863
- external, 863
- posterior or small, 863
- palpebral, inferior, 861, 866, 870
- superior, 870
- parotid, 864
- patellar (branches of the internal saphenous nerve), 838, 848
- pathetic, see "Nerve, trochlear"
- pectoral, see "Nerves, intercostal"
- of the pelvic viscera, 890
- of the penis, 854, 855
- pericardial, 820
- perineal, 841, 852, 853, 856
- of the perineal region, female, 853
- male, 852
- peroneal, 840, 842, 844, 845, 849
- communicating, 842, 849
- petrosal, deep, great, 863, 886, and App., note 402
- small, 874, 886, and App., notes 402 and 400
- superficial, great, 807, 859, 860, 863, 869, 919
- small, 859, 860, 867
- pharyngeal, 872, 874-878, 884
- phrenic, 816, 817, 820, 821, 858, 877, 878
- phrenico-abdominal, 820, 888
- plantar, external, 843, 846, 847, 851
- cutaneous branches, 846, 850
- deep or muscular branch, 846, 847
- superficial branch, 846, 847
- internal, 843, 846, 847, 851
- inner branch (first digital branch), 850 and note
- pneumogastric, 774, 803, 807, 817, 820, 868, 872-884, 887
- cephalic portion, 876
- cervical portion, 876, 878
- nuclei of, 769
- roots of, 769, 774, 790, 791, 873, 876
- thoracic portion, 878, 879
- popliteal (= internal popliteal, the N. tibialis of Continental anatomists), 840, 842, 843, 847, 849, and note 2 to p. 840
- internal, 840, 842, 843, 849, and note 2 to p. 840
- external, 840, 842, 844, 845, 849
- portio dura of the seventh cranial, see "Nerve, facial"
- intermedia of the seventh cranial, 765, 769, 774, 869, 873
- mollis of the seventh cranial, see "Nerve, auditory"
- pterygoid, external, 867
- internal, 867 and App., note 407
- puddental, inferior, 840, 841, 849, 852, 853
- pulmonary, anterior, 820, 878, 887
- (branches of the sympathetic), 884, 887
- posterior, 872, 879
- to the pyriformis muscle, 836
- radial, 825-828, 830, 831, 833, 835; see also "Nerve, musculospiral"

Nerve or nerves:

- to the rhomboid muscles, 813, 816, 821, 824
- rectal, see "Nerves, hæmorrhoidal"
- of the rectum, 890
- recurrent (branch of the inferior maxillary nerve), 860, 867, 868
 - (branch of the ophthalmic nerve), 860, 864
 - (branches of spinal nerves), see "Nerves, sinuvertebral"
 - (branch of the superior maxillary nerve), 860
- respiratory, external (of Bell), see "Nerve, thoracic, posterior"
- saccular, 936, 937, 959
- sacculo-ampullary, 937
- sacral, 811, 813, 836, 885, 890
 - anterior primary divisions, 856, 890
 - posterior primary divisions, 811, 813
 - cutaneous offsets of external branches of same (nervi clunium superiores), 813, 849, 851
- saphenous, external or short, 842, 844, 845, 849, 851
 - internal or long, 838, 839, 848, 849, 851
 - patellar branches, 838, 848
- sciatic, great, 836, 840-842, 858, 890
 - small, 836, 840, 841, 849, 851, 856
 - femoral cutaneous branches, 849
 - gluteal cutaneous branches, 840, 841, 849, 851
- scrotal, 841
 - anterior, 814
 - long, 852, 856
- of the scrotum, 852
- of the shoulder, 822-824
- sinuvertebral, 886 and App., note ⁴⁷³
- of the sole of the foot, 846, 847
- sphenopalatine, 861-863
- spinal, 759, 809-856
 - anterior primary divisions, 759, 810, 812
 - posterior primary divisions, 759, 810-813
- spinal accessory, 774, 868, 872, 873
 - external or spinal portion, 817-819, 868, 877
 - internal, bulbar, accessory, or vagal portion, 868, 873
 - nucleus of, 768
 - roots of, 769, 774, 786, 873
- of the spinal canal, 886
- splanchnic, great, 884, 885, 888, 889
 - small, 884, 885, 888
 - renal branch of, 888
 - smallest, App., note ⁴⁷⁵
- to the stapedius muscle, 868
- of the stomach, 879
- to the stylohyoid muscle, 869
- to the stylopharyngeus muscle, 817, 877
- subcaudal, 836, 852, 853, 856
- to the subclavius muscle, 817, 820, 821
- subcostal, 810, note, 814, note, 836, note
- sublingual, 864, 867, and App., note ⁴⁵³
- submaxillary (branches of the lingual nerve), 864, 867
- suboccipital, 813
- subscapular, 815 and note, 816, 821-823
 - middle or long, 815 and note, 821-823
- supraclavicular, 815-819, 830, 831, 835
- supramaxillary (branch of the facial nerve), 818, 866, 870, 871
- supra-orbital, 859-861, 865, 870, 871, 909
- suprascapular, 816, 817, 821, 824
- supratrochlear, 859, 860, 866, 870, 871, 909
- of the teeth of the lower jaw, 865
 - of the upper jaw, 861, 862
- temporal (branches of the facial nerve), 870, 871
 - (branch of the temporomalar nerve), 862, 870
 - deep, anterior, 865 and App., note ⁴⁵⁴
 - middle, 877 and note
 - posterior, 865 and App., note ⁴⁵⁴
 - superficial, 870, 871, 921
- temporomalar, 859, 862, 911
- to the tensor palati muscle, 867
- tympani muscle, 867

Nerve or nerves:

- of the thigh, 838-841
 - thoracic, anterior, 816, 817, 821
 - posterior, 815, 816, 821
 - of the thoracic viscera, 887
 - to the thyrohyoid muscle, 817, 877, 878
 - tibial, 840, note
 - anterior, 844, 845, 848, 851
 - external terminal branch, 845 and note
 - internal terminal branch, 844, 845
 - communicating, 840, 842, 849
 - posterior, 843, 847, and App., note ⁴⁵²
 - of the tongue, 875, 877, 880-882
 - tonsillar, 881
 - tracheal, 872, 875, 878, 880, 881
 - trifacial, see "Nerve, trigeminal"
 - trigeminal, 765, 790, 803, 858-871
 - cutaneous area, 811, 858
 - nuclei, 769, 787
 - roots, intracerebral, 769, 774, 786-789
 - large or sensory and small or motor, 769, 859, 863, 867, 873
 - trochlear, 767, 774, 799, 803-805, 860, 868
 - nucleus of, 769, 791, 799
 - root of, 769, 774, 788, 805, 806
 - of the trunk, 810-815
 - tympanic, 874, 876
 - ulnar, 816, 821-823, 825-833
 - deep branch, 826-829, 832, 833, and App., note ⁴⁵³
 - dorsal cutaneous branch, 825, 828, 831
 - palmar cutaneous branch, 826-828, 830, 833
 - superficial branch, 828 and App., note ⁴⁵³
 - of the upper arm, 822-824, 830, 831
 - utricular, 935, 937
 - utriculo-ampullary, 936, 937
 - vagus, see "Nerve, pneumogastric"
 - vesical, inferior, 836, 856, 890
 - superior, 890 and App., note ⁴⁷⁸
 - Vidian, 859, 862, 863, 947
 - vestibular, 936, 937, 939, and App., note ⁵⁴⁴
 - nuclei of, 769, 789
 - of Wrisberg, 822, 830, 831
- Nerve cell, motor, 747
- Purkinje's, 747
 - sensory, 747
- cells, 747, 750, 755-757, and App., note ⁴²¹
- fibræ, 746-750 and App., note ³¹⁹
- medullated, 746, 748-750, and App., note ³¹⁹
 - non-medullated, 747, 748, 750, and App., note ³¹⁹
- fibrils, ultimate, ending freely, 748 and App., note ²²⁵
- process, 747, and see also "Axon" and "Dendron"
- terminals, motor, 749, 750
 - sensory, 748-750
- Nervous system, central, 751-808
- peripheral, 809-882
 - sympathetic, 883-890
- Nervus *vel* nervi:
- abducens, 765, 774, 799, 803, 861, 868, 869, 886, 903
 - accessorius, 774, 868, 872, 873
 - ramus externus, 817-819, 868, 877
 - internus, 868, 873
 - acusticus, 765, 773, 803, 807, 869, 918, 919, 936, 937, 939
 - alveolares superiores, 861, 862, 864
 - alveolaris inferior, 859, 863-865, 867
 - ampullaris lateralis, 935, 937
 - posterior, 935-937
 - superior, 935, 937, 938
 - anococcygei, 836, 852, 853, 856
 - auriculares anteriores, 870, 871
 - auricularis magnus, 816, 818, 819, 870, 871
 - posterior, 869, 871
 - auriculotemporalis, 859, 864, 867, 869-871, 921
 - axillaris, 816, 821, 823
 - buccinatorius, 864-866, 871, 877
 - canalis pterygoidei [Vidii], 819, 862, 863, 947
 - cardiacus imus, 884, 887
 - inferior, 884, 887
 - medius, 876, 884, 887
 - superior, 874, 876, 884, 887

Nervus vel nervi:

carotici externi, 859, 884
 caroticotympanici (sup., inf.), 874, 886
 caroticus internus, 859, 874, 876, 884, 886
 cavernosi penis minores, 890
 cavernosus penis major, 890
 cerebrales, 857-882
 cervicales, 803, 813, 816, 817, 876, 877
 rami anteriores, 816, 817
 cutanei dorsales, 813
 posteriores, 811, 813
 ciliares (breves, longi), 861, 886, 894-896
 clunium inferiores, 840, 841, 849, 851
 medii, 849, 851
 superiores, 813, 849, 851
 coccygeus, 836, 856, 858, 885
 ramus anterior, 856
 cochleæ, 936, 937, 939
 cutaneus *vel* cutanei:
 antibrachii dorsalis, 824-826, 831, 835
 lateralis, 821, 823, 826-828, 830, 833
 medialis, 816, 821, 822, 830, 831, 833
 rami brachii anteriores, 830
 ramus ulnaris, 822, 830, 831
 volaris, 822, 830, 833
 brachii lateralis, 824, 831
 medialis, 822, 830, 831
 posterior, 824, 825, 831
 cervicis (var.), 818, 819
 colli, 816, 818, 819, 870, 871
 femoris lateralis, 836-838, 848, 849, 858
 posterior, 836, 840, 841, 849, 856
 pedis dorsalis intermedius, 844
 lateralis, 844, 845
 medialis, 844
 suræ lateralis, 840, 842, 848, 849
 medialis, 840, 842, 849
 digitales dorsales hallucis laterales et digiti secundi
 medialis, 844, 845
 manus, 825, 831, 833, 834
 pedis, 844, 845, 848
 plantares communes, 846, 847, 850
 proprii, 846, 847, 850
 volares communes, 828, 832, 834
 rami cutanei, 833
 proprii, 832-835
 dorsales clitoridis, 853
 penis, 837, 852, 854-856, 890
 scapulæ, 813, 816, 821, 824
 ethmoidalis, 859, 860
 facialis, 765, 773, 803, 818, 819, 859, 861, 863, 864, 866-874, 936, 937
 femoralis, 836-839, 858
 rami cutanei femoris anteriores, 837, 838, 848, 851
 frontalis, 860, 861, 871, 906
 genitofemoralis, 836-838, 848, 856, 858
 glossopharyngeus, 774, 803, 817, 859, 868, 869, 872-878, 880, 881
 glutæus inferior, 840, 841
 superior, 836, 840, 841
 hæmorrhoidales inferiores, 841, 852, 853
 medii, 836, 856, 890
 superiores, 890
 hypoglossus, 774, 803, 807, 817, 876-878, 880, 882
 ilio-hypogastricus, 814, 815, 836, 837, 858
 ramus cutaneus anterior, 814
 lateralis, 815, 848, 851
 ilio-inguinalis, 814, 836, 837, 848, 851, 858
 infra-orbitalis, 856, 861, 862, 864-866
 infratrochlearis, 859, 860, 866, 870, 871
 intercostales, 810-812, 814, 884
 rami cutanei anteriores (pectorales, abdominales)
 810, 811, 814, 815
 laterales (pectorales, abdominales),
 810, 811, 813-815
 intercostobrachiales, 815, 822, 830
 intermedius, 765, 769, 774, 869, 873

Nervus vel nervi:

interosseus (antibrachii), dorsalis, 825
 volaris, 827-829
 cruris, 843
 ischiadicus, 836, 840-842, 858, 890
 jugularis, 874, 876, 884
 labiales posteriores, 853
 lacrimalis, 859, 860, 862, 911
 laryngeus inferior, 820, 858, 875, 877, 881
 ramus anterior, posterior, 875, 881
 laryngeus superior, 858, 872, 874, 875, 877, 878, 880, 882, 887
 ramus externus, 874, 876-878, 880, 887
 internus, 875-877, 880, 881
 lingualis, 859, 863-865, 867, 877, 880, 882
 lumbales, 811, 813, 836, 858, 884
 ramus cutaneus dorsalis, 813
 rami posteriores, 811, 813
 lumbo-inguinalis, 837, 838, 848, 851
 mandibularis, 806, 807, 858-865, 868, 877
 massetericus, 865
 masticatorius, 867
 maxillaris, 806, 807, 858, 860-864, 866
 meatus auditorii externi, 864, 869
 medianus, 816, 821-823, 826-828, 832
 meningeus medius, 860
 mentalis, 859, 865, 866
 musculoctaneus, 816, 821-823, 835
 mylohyoideus, 863, 865, 867
 nasociliaris, 859-861, 863, 866, 886
 nasopalatinus [Scarpæ], 862
 nervorum, App., note ³⁰⁰
 obturatorius, 836, 837, 839, 851, 856, 858
 ramus anterior, 839
 cutaneus, 839, 848, 849, 851
 posterior, 839
 occipitalis major, 813, 818, 871
 minor, 813, 816, 818, 819, 871
 tertius (var.), 813
 oculomotorius, 764, 765, 774, 789, 799, 803-805, 859-862, 868, 886, 903, 905
 olfactorii, 862, 863
 ophthalmicus, 858, 860-862
 opticus, 765, 766, 774, 803-807, 860, 861, 892, 897-899, 904, 907
 pars intracranialis, orbitalis, 904
 primitivus, 915
 palatini (anterior, medius, posterior), 859, 862, 863
 perinei, 841, 852, 853, 856
 peronæus communis, 840, 842, 844, 845, 849
 profundus, 844, 845, 848, 851
 superficialis, 844, 848, 851
 petrosus profundus, 863, 886
 superficialis major, 807, 859, 860, 863, 869, 919
 minor, 859, 860, 867
 phrenicus, 816, 817, 820, 821, 858, 877, 878
 plantares (medialis, lateralis), 843, 846, 847, 850, 851
 rami cutanei, 846
 ramus profundus, 846, 847
 superficialis, 846, 847, 850
 pterygoideus (externus, internus), 867
 pudendus, 811, 841, 852, 853, 856, 858, 890
 radialis, 816, 821-828, 830, 831, 833, 835
 ramus profundus, 825-828
 superficialis, 825-828, 830, 831, 833, 835
 recurrens, 872, 875, 877-881, 887
 saccularis, 936, 937, 939
 sacrales, 811, 813, 836, 885, 890
 rami anteriores, 856, 890
 posteriores, 811, 813
 saphenus, 838, 839, 848, 849, 851
 rami cutanei cruris mediales, 848, 849, 851
 scrotales anteriores, 814
 posteriores, 852, 856
 sinuvertebrales, 886
 spermaticus externus, 814, 837, 838, 848, 851
 sphenopalatini, 861-863
 spinales, 759, 809-856
 rami anteriores, 759, 810, 812
 posteriores, 759, 810-813

Nervus vel nervi:

- spinosus, 860, 867, 868
 - splanchnicus major, 884, 885, 888, 889
 - minor, 884, 885, 888
 - stapedius, 868
 - subclavius, 817, 820, 821
 - sublingualis, 864, 867
 - suboccipitalis, 813
 - subscapulares, 815, 816, 821-823
 - supraclaviculares, 815-819, 830, 831, 835
 - supra-orbitalis, 859-861, 865, 870, 871, 909
 - suprascapularis, 816, 817, 821, 824
 - supratrochlearis, 859, 860, 866, 870, 871, 909
 - suralis, 842, 844, 845, 849, 851
 - temporalis profundus, anterior, 865
 - medius, 877
 - posterior, 865
 - tensoris tympani, 867
 - veli palatini, 867
 - tentorii, 860, 864
 - thoracales, 810-814, 858
 - ranus anterior, 810
 - cutaneus dorsalis, 810, 813, 824
 - lateralis, 810, 811, 814, 815
 - thoracales anteriores, 816, 817, 821
 - posteriores, 821
 - thoracalis longus, 815, 816, 821
 - thoracodorsalis, 821-823
 - tibialis, 840, 842, 843, 847, 849
 - trigeminus, 765, 790, 803, 858-871
 - portio major, portio minor, 769, 859, 863, 867, 873
 - trochlearis, 767, 774, 799, 803-805, 860, 868
 - tympanicus, 874, 876
 - ulnaris, 816, 821-823, 825-833
 - ramus cutaneus palmaris, 826-828, 830, 833
 - dorsalis manus, 825, 828, 831
 - profundus, 826-829, 832, 833
 - superficialis, 828
 - utricularis, 935, 937
 - vagus, 774, 803, 807, 817, 820, 868, 872-884, 887
 - vesicales inferiores, 836, 856, 890
 - superiores, 890
 - vestibuli, 936, 937, 939
 - zygomaticus, 859, 862, 911
- Network, see "Plexus"
- nervous, App., note 322
- Neurilemma, 746, and App., note 318
- Neurolemma, see "Neurilemma"
- Neurologia, 743-890
- Neurology, 743-890
 - general considerations, 745-750
- Neuron, App., note 321
- Nidus avis, 771
- Nodal point, 892
- Node of Ranvier, 746 and note
- Nodule (of the cerebellum), 767, 770-772
- Noduli lymphatici conjunctivales, 910
- Nodulus vermis, 767, 770-772
- Nose, 941-948
 - accessory cavities of the, 544
- Nostrils, 942, 946, 948
- Notch, cerebellar, anterior, 770
 - posterior, 770-772
- of Rivinus, 923, 924
 - of the tentorium, 805, 860, and App., note 412

Nucleus or nuclei:

- abducent, 769, 787, 799, and App., note 370
- accessory vagoglossopharyngeal, 767, 786
- alae cineræ, 769, 786
- ambiguus, 769, 786
- amygdalæ, 775, 782, 792
- amygdaloid, 775, 782, 792
- of the anterior tubercle (of the optic thalamus), 785, 794
- arcuati, 786, 787
- of the auditory nerve, accessory, 769, 787
 - dorsal, 769, 787
 - inner, 769, 787
 - outer, 769, 787
 - ventral, 769, 787

Nucleus or nuclei:

- caudate, 766, 785, 790-795, 797
- caudatus, 766, 792-795, 797
- colliculi inferioris, 788, 791
- corporis geniculati lateralis, 798
 - medialis, 789
 - mamillaris, 785
- of the corpus albicans, 785
- of the corpus striatum, extraventricular, see "Nucleus, lenticular"
- intraventricular, see "Nucleus, caudate"
- of the cranial nerves, 769
- of the cuneate column, 786, 796, 797
- of Deiters, 769, note
- dentate (nucleus dentatus), 772, 773, 797
- of the descending root of the fifth (cranial) nerve, 769
- dorsalis [Stillingi, Clarkii], 755
- emboliformis, 772, 773
- eminentiæ medialis, 787
- extraventricular, of the corpus striatum, see "Nucleus, lenticular"
- of the facial nerve (facial nucleus), 769, 787, 800, and App., note 370
- fastigii, 772, 773
- of the fifth (cranial) nerve, motor, 769
 - sensory, 769, 787
 - lower, 769
- funiculi cuneati, 786, 796, 797
 - gracilis, 786, 796, 797
- of the funiculus solitarius, 769
 - teres, 787
- of the geniculate body, external, 798
 - internal, 789
- globosus, 772
- of the glossopharyngeal nerve, motor, 769
 - sensory, 769, 787
- habenulæ, 791, 794, 795
- of the hypoglossal nerve, 769, 786, 800
- hypothalamicus, 785, 791, 792, 797
- intraventricular, of the corpus striatum, see "Nucleus, caudate"
- lateral, of the medulla oblongata (nuclei laterales), 786
- lemnisci lateralis, 788, 796
- of the lens (nucleus lentis), 893, 900
- lenticular, 766, 792-794
- lentiformis, 766, 792-794
- of Luys, 785, 791, 792, 797, and App., note 402
- of the medulla oblongata, lateral, 786
- of nerve cell, 747
- of nerves, see under respective nerves
- of the nerves supplying the muscles of the orbit, 799
- nervi abducentis, 769, 787, 799
 - accessorii, 769
 - acustici (dorsalis, ventralis), 787
 - cochleæ, 769
 - facialis, 769, 787, 800
 - glossopharyngei motorius, 769
 - sensibilis, 769, 787
 - hypoglossi, 769, 786, 800
 - oculomotorii, 769, 789, 799
 - optici, 769
 - trigemini motorius, 769
 - sensibilis, 769, 787
 - trochlearis, 769, 788, 791, 799
 - vagi (motorius, sensibilis), 769
 - vestibuli, 769
- of neurilemma, 746 and App., note 318
- of the oculomotor nerve, 769, 789, 799
- olivares accessorii, 786
- olivary, accessory, dorsal, 786
 - external, 786
 - internal, 786
- inferior (nucleus olivaris inferior), 773, 786, 787, 790, 797
- superior (nucleus olivaris superior), 787, 796

Nucleus or nuclei:

- of the optic nerve, 769 and App., note ³⁷⁸
- of the optic thalamus, anterior, 785, 794
 - lateral, 794
 - mesial, 794
- originis nervorum cerebrarium, 769
- parolivary, see "Nucleus, olivary, accessory"
- of the pneumogastric nerve, motor, 769
 - sensory, 769
- pontis, 788
- principal, of the glossopharyngeal and pneumogastric nerves, 769, 786
- pyramidal (nucleus pyramidis), 787 and App., n. ³⁸⁰; see also "Nucleus, olivary, accessory, internal"
- of the quadrigeminal body (lower or posterior), 788, 791
- radicis descenditis nervi trigemini, 769
- red, 785, 789, 791
- of the roof, 772, 773
- ruber, 785, 789, 791
- of the sixth cranial nerve (abducent nucleus), 769, 787, 799, and App., note ³⁷⁸
- of the slender column, 786, 796, 797
- of the solitary bundle, 769
- of the spinal accessory nerve, 769
- of the superficial arched fibres, 786, 787
- tegmental, 785, 789, 791
- thalami anterior, 785, 794
 - lateralis, 794
 - medialis, 794
- tractus solitarii, 769
 - spinalis nervi trigemini, 769
- of the trigeminal nerve, see "Nucleus of the fifth (cranial) nerve"
- of the trochlear nerve, 769, 788, 791, 799
- vagal, see "Nucleus of the pneumogastric nerve"
- vagoglossopharyngeal, accessory or efferent, 769, 786
 - principal, 769, 786

O.

- Obex, 768
- Oesophageal cord, see "Cord, oesophageal"
- Olfactory bulb, 774, 775, 803, 807, 862
 - groove, 914
 - organ, 941-948
 - triangle, see "Trigonum olfactorium"
- Oliva, 752, 753, 763, 765, 766
- Olivary body, see "Olive"
- Olive, lower, 752, 753, 763, 765, 766, and App., note ³²⁷
- Operculum, 777
 - of the pituitary body, see "Diaphragm, pituitary"
- Optic commissure or chiasma, 763-766, 774-776, 792, 793, 798, 804, 805, 815
 - cup, 914, 915
 - excavation, nerve, etc., see "Excavation, optic," "Nerve, optic," etc.
 - lobes, see "Corpora quadrigemina," also note ⁵ to p. 760
 - recess, 764, 793
 - thalamus, 760, 761, 763, 764, 767, 782, 785, 790-797
- Ora serrata, 892, 893, 895, 898, 901
- Orbicularis ciliaris, 894-897, 901
- Orbit, 903-907
 - entrance to the, 910
- Orbita, 903-907
- Orbital cone of fat, 902, 906, 907, 911
 - periosteum, 807, 902, 904, 906, 907
- Organ, auditory, 917-940
 - of Corti, 939
 - of hearing, 917-940
 - of Jacobson, 943, 948
 - olfactory, 941-948
 - of smell, 941-948
 - tactile, 949-956
 - touch, 949-956
 - vision, 891-916

Organa sensuum, 891-956

- Organon auditus, 917-940
 - olfactus, 941-948
 - spirale [Corti], 939
 - tactus, 949-956
 - visus, 891-916
 - vomeronasale [Jacobsoni], 943, 948
- Organs of the senses, 891-956
- Orifice of the aqueduct of the cochlea, internal, 930, 934
 - of Fallopius (in internal auditory meatus), 934, 935, and App., n. ³²⁸
 - of the vestibule, external, 933
 - internal, 930
- of the cochlea, vestibular, 931, 932, 935, 937
- of the Eustachian tube, pharyngeal, 918, 919, 928
 - tympanic, 918, 928
- of the pituitary diaphragm, 804
- Orifices of the sudoriferous ducts, 950
- Origin of nerve fibres, 750
- Ossicles, auditory, 918, 919, 925
- Ossicula auditus, 918, 919, 925
- Ostium pharyngeum tubæ auditivæ, 918, 919, 928
 - tympanicum tubæ auditivæ, 918, 928
- Otic vesicle, 762, 858

P.

- Pacchionian bodies, 779, 802
- Pacinian corpuscle, 749, 834, and App., note ³²⁸
- Pallium, 760 and note, 761
- Panniculus adiposus, 950, 951
- Palpebræ (inferior et superior), 908-911, 913
 - facies anterior, 908
 - posterior, 909
- † pars orbitalis, tarsalis, 908
- Palpebral cleft, 908
 - fascia, 907, 909
- Papilla or papillæ:
 - of the corium (papillæ corii), 950, 951
 - of hair, 952, 953
 - lachrymal (papilla lacrimalis), 908-910, 912
 - nervi optici, 892, 898, 899, 916
 - optic, 892, 898, 899, 916
 - pili, 952, 953
- Paries (cavi tympani) jugularis, 926, 933
 - labyrinthicus, 923, 927
 - lateralis, 924, 926
 - membranaceus, 927
 - tegmental, 926, 931
- *Parolfactory area, 777, 793, 795
- Pars basilaris pontis, 787, 788
 - centralis ventriculi lateralis, 781, 784, 785, 792
 - choroidalis iridis, 893, 896
 - ciliaris retinæ, 892, 893, 898
 - dorsalis pontis, 788
 - flaccida (membranæ tympani), 922, 924, 925
 - frontalis capsulæ internæ, 793, 794
 - grisea hypothalami, 792
 - libera columnæ fornicis, 783, 795
 - mamillaris hypothalami, 760, 761
 - marginalis (sulci cinguli), 777
 - occipitalis capsulæ internæ, 794
 - opercularis (gyri frontalis inferioris), 777, 800
 - optica hypothalami, 760, 761
 - retinæ, 892, 893, 898
 - orbitalis (gyri frontalis inferioris), 777
 - prima radialis nervi facialis, 769
 - secunda radialis nervi facialis, 769
 - subfrontalis (gyri cinguli), 777
 - tecta columnæ fornicis, 783, 795
 - tensa (membranæ tympani), 924
 - triangularis (gyri frontalis inferioris), 777
- Part, nasopharyngeal, of the lateral wall of the nasal fossæ, 944, 946
- Peduncle or peduncles:
 - cerebellar, see "Peduncle of the cerebellum"
 - of the cerebellum, inferior, 765, 771-773, 786, 787
 - middle, 765-769, 771-773, 791

- Peduncle or peduncles:**
 of the cerebellum, superior, 760, 761, 766-768, 717-773, 788, 789
 cerebral, 760, 761, 765-768, 774, 789-791
 of the corona radiata, see "Capsule, internal"
 of the corpus callosum, 764, 777, 793
 olivary, App., note 328
 of the pineal body, 782, 794, and App., note 326
- Pedunculus cerebri**, 760, 761, 765-768, 774, 789-791
 coronæ radiatæ, 766, 790
 corporis callosi, 777
 flocculi, 767, 771
 thalami inferior, 792, 797
- Perforate spiral tract**, 932, 935, and App., note 324
- Perichoroidal space**, 893
- Perilymphatic space**, 937-939
- Perineurium**, 746 and App., note 320
- Peri-orbita**, 807, 902, 906, 907
- Periosteum, orbital**, 807, 902, 904, 906, 907
- Peripheral nervous system**, 809-882
- Pes accessorius**, 782, 785, 791, 794
 hippocampi, 782, 792
- Pharynx, lateral recess of the**, 919, 946
- Pia mater, cranial (pia mater encephali)**, 779, 785
 spinal (pia mater spinalis), 754, 755, 759
- Pillar of the fornix**, anterior, 776, 781-784, 790-795
 posterior, 783, 784, 794, 795
- Pillars of the iris**, see "Ligamentum pectinatum iridis"
- Pilus**, 952, 953
- Pineal body**, see "Body, pineal"
 recess, 764 and App., note 323
 stria, 763, 782, 785, 794, and App., notes 320 and 322
- Pinguecula**, 908 and App., note 320
- Pit, physiological**, 892, 898, 899
- Pituitary body**, 760, 761, 764, 774, 776, 802, 808
 diaphragm, 805, 808, and App., note 411
 orifice of, 804
 membrane, 947, 948
- Plate, perforated**; see "Space, perforated"
 tragus, 921, 922
- Plexus, nervous; plexus nervorum:**
 alveolaris inferior, 859
 aortic, abdominal, 888-890
 thoracic, 879, 887
 aortic abdominalis, 888-890
 thoracalis, 879, 887
 brachial, 816, 817, 821-823, 884
 axillary or infraclavicular portion, 822, 823
 cervical or supraclavicular portion, 817, 821
 cutaneous area of, 811
 brachialis, 816, 817, 821-823, 884
 pars infraclavicularis, 822, 823
 supraclavicularis, 817, 821
 cardiac (plexus cardiacus), 878, 887
 caroticus communis, 876
 externus, 859, 864
 internus, 859, 867, 874, 884, 886, 903
 carotid, common, 878, 887
 external, 859, 864
 internal, 859, 867, 874, 884, 886, 903
 cavernosus, 886
 penis, 890
 cavernous (in the cavernous sinus), 888
 of the penis, 890
 cervical (plexus cervicalis), 816-819, 878, 884
 cutaneous area of, 816, 858
 coccygeal (plexus coccygeus), 856 and note to p. 831
 coeliac (plexus coeliacus), App., note 474
 coronarius cordis anterior, 887
 posterior, 887
 coronary, left or anterior, 887
 right or posterior, 887
 deferential (plexus deferentialis), 890
 dental, inferior (plexus dentalis inferior), 859, 865
 superior (plexus dentalis superior), 862
 diaphragmatic, 888, 889
- Plexus, nervous; plexus nervorum:**
 epigastric, 888, 889, and App., note 474
 of the facial (external maxillary) artery, 859
 gangliated, ciliary, 894, 896, and App., note 428
 gangliosus ciliaris, 894, 896
 gastric, 872, 879, 888, 889, and App., note 465
 gastricus anterior, 879
 posterior, 872
 superior, 888, 889
 hæmorrhoidal, middle, 890
 superior, 890
 hæmorrhoidalis medius, 890
 superior, 890
 hepatic (plexus hepaticus), 888, 889
 hypogastric (plexus hypogastricus), 888, 889
 iliac (plexus iliacus), 888, 890
 lienalis, 888, 889
 lumbalis, 836, 837, 885
 lumbar, 836, 837, 885
 cutaneous area of, 811
 lumbosacral (plexus lumbosacralis), 836, 890
 maxillaris externus, 859
 internus, 867
 maxillary, internal, 867
 meningeal, middle, 859, 867
 meningeus, 859, 867
 mesenteric, inferior (plexus mesentericus inferior), 888, 890
 superior (plexus mesentericus superior), 888, 889
 œsophageal (plexus œsophageus), 872, 879
 parotid (plexus parotideus), 871
 pharyngeal (plexus pharyngeus), 876, 877
 phrenic (plexus phrenicus), 888, 889
 prostatic (plexus prostaticus), 890
 pudendo-anal, 836, note
 pudendus, 835, 856, 890
 pudic, 836, 856, 890, and note to p. 836
 pulmonalis anterior, 820, 878
 posterior, 872, 879
 pulmonary, anterior, 820, 878
 posterior, 872, 879
 renal (plexus renalis), 888, 889
 sacral (plexus sacralis), 836, 856, 885
 cutaneous area of, 811
 solar, 888, 889, and App., note 474
 spermatic (plexus spermaticus), 888, 889
 splenic, 888, 889
 subclavian (plexus subclavius), 816, 884, 887
 suprarenal (plexus suprarenalis), 888, 889
 sympathetic (plexus sympathici), 888-890
 thyroid, inferior (plexus thyroideus inferior), 884
 tympanic (plexus tympanicus Jacobsoni), 874
 of the vas deferens, 890
 vertebral (plexus vertebralis), 814, 884, 887
 vesical (plexus vesicalis), 890
- Plexus, vascular:**
 cavernous, of the inferior turbinals (plexus cavernosus concharum), 945 and App., note 326
 choroid, of the fourth ventricle, 764, 767, 774
 of the lateral ventricle, 762, 763, 780, 781, 784, 785, 790
 of the third ventricle, 764, 785, 791
 choroideus ventriculi lateralis, 762, 763, 780, 781, 784, 785, 790
 quarti, 764, 767, 774
 tertii, 764, 785, 791
- Plica vel plicæ:**
 ciliares, 895
 incudis, 925, 926
 iridis, 896
 lacrimalis [Hasneri], 913
 malleolaris anterior, 924
 posterior, 924
 membranæ tympani anterior, 924
 posterior, 924
 nervi laryngei, 875
 salpingopalatina, 928
 semilunaris conjunctivæ, 908, 910, 912
- Point nodal**, 892

Pole, anterior, of the eyeball, 892
 of the lens, 900
 frontal, 774, 775, 778, 779
 occipital, 774, 775, 778
 posterior, of the eyeball, 890
 of the lens, 900
 temporal, 774, 775, 779, 782, 793
 Polus anterior bulbi, 892
 lentis, 900
 frontalis, 774, 775, 778, 779
 occipitalis, 774, 775, 778
 posterior bulbi, 892
 lentis, 900
 temporalis, 774, 775, 779, 782, 793
 Pons [Varoli], 760, 761, 763-766, 771-774, 776, 787, 788, 908
 Pons Varolii, basilar or ventral portion, 787, 788
 posterior or dorsal portion, 788
 Ponticulus of the auricle, 921
 Portio intermedia of Wrisberg, 765, 769, 774, 869, 873
 *Portion, cupular, of the epitympanic recess, 922, 925, 926,
 and App., note 411
 Porus sudoriferus, 950
 Post-nasal region, 944
 Pouch of Prussak, 922, 924, 925
 of the tympanum, anterior, 924
 inferior external, 922, 924, 925
 posterior, 924
 Præcuneus, 777
 Precuneus, 777
 Primary divisions of spinal nerves, anterior, 759, 810, 812
 posterior, 759, 810-813
 Process, caudal, of the helix, 921
 ciliary, 892, 893, 895, 897, 901
 of the incus, long, 923, 925, 927
 short, 925, 927
 of the malleus, long, 923, 925
 short, 923, 925
 nerve, 747, and see also "Axon" and "Dendron"
 posterior, of the cartilaginous septum of the nose,
 943, 947
 protoplasmic, see "Dendron"
 sphenoidal, of the cartilaginous septum of the
 nose, 943, 947
 triangular, 921, 922
 Processus brevis, 923, 925
 ciliaris, 892, 893, 895, 897, 901
 Folianus, 923, 925
 gracilis, 923, 925
 lenticularis, 925
 mallei anterior [Folii], 923, 925
 lateralis, 923, 925
 obtusus, 923, 925
 orbicularis, 925
 reticularis, 755, 786
 sphenoidalis (septi cartilaginei), 942, 947
 triangularis, 921, 922
 Prominence of the external semicircular canal, 923, 927
 malleolar, 924, 925, and App., note 613
 spiral, 939 and App., note 649
 Prominentia canalis semicircularis lateralis, 923, 927
 malleolaris, 924, 925
 spiralis, 939
 Promontorium (cavi tympani), 923, 927, 931, 933
 Promontory (of the tympanic cavity), 923, 927, 931, 933
 Proper substance of the cornea, 893
 Prosencephalon, 760, 761
 Protoplasmic process, see "Dendron"
 Prussak, pouch of, 922, 924, 925
 Pulley (of the superior oblique muscle), see "Trochlea"
 Pulvinar, 766, 767, 769, 795
 Punctum lacrimale, 908-910, 912
 Pupil, 894, 896, 908
 Pupilla, 894, 896, 898
 Pupillary membrane, 916
 Purkinje, cell or corpuscle of, 747
 Putamen, 766, 790-797
 Pyramid bundles, see "Bundles, pyramid"
 of the medulla oblongata, 752, 753, 764, 765, 773,
 786, 787, 790, 791, 800
 posterior, see "Funiculus gracilis"

Pyramid (of the tympanum), 923, 927, 931
 of the vestibule, 931, 933, 935
 of the worm, 770-772
 Pyramidal tract, 790, 800
 Pyramis medullæ oblongatæ, 752, 753, 764, 765, 773, 786, 787,
 790, 791, 800
 vermis, 770-772
 vestibuli, 931, 933, 935

Q.

Quadrate lobe of the cerebellum, App., note 381
 lobule of the cerebellum, 777
 Quadrigeminal bodies, 760-764, 766-768, 791, note 5 to p. 763,
 and App., note 372
 body, inferior or posterior, 767, 791, 796, and
 App., note 373
 superior or anterior, 767, 789, 796, and
 App., note 372
 lamina, 764-776, 802, 808
 Quadrilateral lobe or lobule of the cerebellum, 770

R.

Radiato corporis callosi, 780, 782, 790, 791, 801
 striati, 790
 occipitothalamica [Gratiolet], 791, 794, 798
 Radiation of the corpus callosum, 780, 782, 790, 791, 801
 striatum, 790 and App., note 401
 facial, of the superior maxillary nerve, 861
 nasopalatine, of the superior maxillary nerve,
 863
 optic (of Gratiolet), 791, 794, 798
 tegmental, App., note 406
 Radix *vel* radices:
 cochlearis, 769, 787
 descendens (mesencephalica) nervi trigemini, 769, 788
 nervi abducentis, 769, 805
 accessorii cerebri, 769, 873
 spinalis, 769, 786, 873
 acustici, 769, 774, 787
 facialis, 769, 771, 774, 787
 glossopharyngei, 769, 774, 787, 876
 hypoglossi, 769, 774, 786
 oculomotorii, 769, 774, 788, 799
 trigemini, 769, 774, 786, 787, 860
 trochlearis, 769, 774, 788, 860
 vagi, 774, 873, 876
 motoria, 769
 sensibilis, 769
 nervorum cerebri, 774
 spinalium (anteriores, posteriores), 752,
 753, 755-759, 769, 810, 812
 pili, 952, 953
 tractus optici (lateralis, medialis), 765, 798
 unguis, 956
 vestibularis, 769, 787
 Ramification of axis-cylinder in motorial end-organ, 749
 Ramus *vel* rami:
 alveolares (superiores), 859, 861, 862
 auricularis (nervi vagi), 868, 876
 bronchiales anteriores, 820, 878, 887
 posteriores, 872, 879
 buccales (nervi facialis), 871
 calcanei mediales, laterales, 843-851
 cardiacus (nervi laryngei superiores), 874, 877, 887
 inferior (nervi vagi), 820, 878, 887
 superior (nervi vagi), 817, 872, 876, 878, 887
 cœliacus (chordæ œsophageæ posteriores), 872
 colli (nervi facialis), 818, 819, 871
 communicans, 759, 810, 812, 816, 836, 837, 884-887
 dentales, 862, 865
 descendens nervi hypoglossi, 817, 858, 877
 dorsalis manus (nervi ulnaris), 825
 digastricus, 869, 871
 frontalis, 860, 861, 865, 870, 871
 gingivales, 862, 865
 hepatici, 872, 879
 infrapatellaris, 838, 848
 isthmi faucium (nervi lingualis), 864, 867

Ramus vel rami:

- labiales inferiores, 865, 866
 - superiores, 865, 866, 871
- laryngopharyngei, 876
- linguales (nervi glossopharyngei), 875, 881
 - (nervi lingualis), 880, 882
- mammarii, 815
- marginalis mandibulae, 818, 866, 870, 871
- meningeus, 886
- mentales, 866
- nasales anteriores, 859, 863
 - externi, 863, 865, 866
 - interni (mediales), 862
 - (laterales), 863
 - posteriores, 859, 863, 947
- occipitalis (nervi facialis), 871
- oesophagei, 872, 877-881
- palmaris nervi mediani, 826-828, 830, 833
- palpebrales inferiores, 861, 866, 870
 - superiores, 870
- parotidei, 864
- pericardiacus, 820
- perineales, 840, 841, 849, 852, 853
- pharyngeus, 872, 874-878, 884
- phrenico-abdominales, 820, 888
- pulmonales (trunci sympathici), 884, 887
- renalis (nervi splanchnici minoris), 888
- † sacculo-ampullaris, 937
- scrotalis (nervi cutanei femoris posterioris), 841
- stylohyoideus, 869
- stylopharyngeus, 817, 877
- submaxillares (nervi lingualis), 864, 867
- temporales (nervi facialis), 870, 871
- thyreo-hyoideus, 817, 877, 878
- tonsillares, 881
- tracheales, 872, 875, 878, 880, 881
- † utriculo-ampullaris, 936, 937
- zygomatici (nervi facialis), 866, 870, 871
- zygomaticofacialis, 862, 865, 870
- zygomaticotemporalis, 862, 870
- Ranvier, node or constriction of, 746 and note
- Raphe of the medulla oblongata (raphe medullae oblongatae), 764, 767, 773, 786
 - of the pons Varolii (raphe pontis), 787, 788
- Recess, elliptical, 930, 931, 933
 - epitympanic, 924-928, 932
 - cupular portion of the, 922, 925, 926, and App., note ⁵¹¹
 - of the fourth ventricle, lateral, 767
 - of the infundibulum, 764 and App., note ³⁶¹
 - lateral, of the fourth ventricle, 767
 - of the pharynx, 919, 946
 - optic, 764, 793
 - pineal, 764 and App., note ³⁶⁶
 - of the pharynx, lateral, 919, 946
 - of the posterior perforated space, anterior, 764 and App., note ³⁶²
 - posterior, 764, 772, 788, 791, and App., note ³⁶²
 - sphenothmoidal, 944, 945
 - spherical, 930, 931, 933
 - suprapineal, 764 and App., note ³⁶⁶
 - triangular, 782, 784, 792, 795, and App., note ³⁶⁹
 - Recessus cochlearis, 930
 - ellipticus, 930, 931, 933
 - epitympanicus, 924-928, 932
 - (fossae interpeduncularis), anterior, 764
 - posterior, 764, 772, 788, 791
 - infundibuli, 764
 - lateralis ventriculi quarti, 767
 - membranæ tympani anterior, 924
 - posterior, 924
 - superior, 922, 924, 925
 - opticus, 764, 793
 - pharyngeus [Rosenmuelleri], 919, 946
 - pinealis, 764
 - sphaericus, 930, 931, 933

- Recessus sphenothmoidalis, 944, 945
 - suprapinealis, 764
 - triangularis, 782, 784, 792, 795
- Reflex arc, 757
- Regio olfactoria, 948
 - respiratoria, 948
- Region of the atrium, see "Atrium of the middle meatus of the nose"
 - olfactory, 948
 - respiratory, 948
 - tegmental, subthalamie, App., note ⁴⁰²
 - transitional, App., note ⁴⁰²
- Reil, covered band of, see "Cingulum"
 - island of, 779, 790, 792-795
- Reissner's membrane, 939
- Reservoir, lachrymal, 908, 910, 912, 913
 - subarachnoid, 785, 802, 803, and App., note ⁴⁰⁰
 - cerebellomedullary, 802 and App., note ⁴⁰⁰
 - of the corpus callosum, App., note ⁴⁰⁰
 - of the great vein of Galen, 802 and App., note ⁴⁰⁰
 - of the interpeduncular space, 802, 803, and App., note ⁴⁰⁰
 - of the lamina cinerea, App., note ⁴⁰⁰
 - of the optic commissure, 802, 803, and App., note ⁴⁰⁰
 - peripeduncular, App., note ⁴⁰⁰
 - of the pons, 802, 803, and App., note ⁴⁰⁰
 - of the vallecule and fissure of Sylvius, 802, 803, and App., note ⁴⁰⁰
- Restiform body, 765, 771-773, 786, 787
- Rete mucosum, 950, 956
- Reticular layer of the corium, 950
- Retina, 892, 897-899, 901
 - pars ciliaris, 892, 893, 898
 - optica, 892, 893, 898
 - rudiment of, 914
- * Retinacula of the skin (retinacula cutis), 953, 956, and App., note ⁵⁶³
- Rhinencephalon, 760, 761, 775
- Rhombencephalon, 760, 761, 764
- Rictus oculi, 908 and App., note ⁴⁰⁷
- Ridge, orbital, of the superior maxillary bone, 912, 913
- Ridges of the matrix of the nail, 956
 - of the skin, 950-956
- * Rima cornealis, 893 and App., note ⁴⁹¹
 - palpebrarum, 908 and App., note ⁴⁹⁷
- Ring, common tendinous (for the origin of the muscles of the orbit), 903, 905
 - tympanic, 924, 926
- Riolan's muscle, 909, 910, and App., note ⁵⁰¹
- Rivi, subarachnoid, App., note ⁴⁰⁰
- Rivinus, notch of, 923, 924
- Rivuli, subarachnoid, App., note ⁴⁰⁰
- * Rivus lachrymalis, 909
- Rod cell, 899 and App., note ⁴⁹¹
- Rods, retinal, 899
- Rolando, fissure of, 776, 778
 - substantia gelatinosa of, 754, 755, 786, 787, 796
- Roof of the fourth ventricle, 766, 773
 - of the tympanum, 926, 931
- Root or roots:
 - of the abducent ocular nerve, 769, 805
 - ascending, of the fifth nerve, 769, 786, 787
 - of the auditory nerve, 769, 774, 787
 - lateral, posterior, or cochlear root, 769, 787
 - mesial, anterior, or vestibular root, 769, 787
 - bulbar, of the fifth nerve, 769, 786, 787
 - of the spinal accessory nerve, 769, 873
 - cochlear, of the auditory nerve, 769, 787
 - of the cranial nerves, 774

- Root or roots:
 descending, of the fifth nerve, 769, 788
 of the facial nerve, 769, 771, 774, 787
 of the fifth cranial nerve, 769, 774, 786, 787, 860
 ascending or bulbar root,
 769, 786, 787
 descending or mesencephalic root, 769, 788
 of the glossopharyngeal nerve, 769, 774, 787, 876
 of hair, 952, 953
 of the hypoglossal nerve, 769, 774, 786
 mesencephalic, of the fifth nerve, 769, 788
 motor, of the pneumogastric nerve, 769
 of nail, 956
 of the oculomotor (third cranial) nerve, 769, 774, 788, 799
 of the olfactory tract, inner or mesial, 765, 775
 middle or grey, 765, 775, and App., note 308
 outer or lateral, 765, 775
 of the optic tract, lateral, 765, 798
 mesial, 765, 798
 of the otic ganglion, long, see "Nerve, petrosal, superficial, small"
 of the pneumogastric or vagus nerve, 774, 873, 876
 motor root, 769
 sensory root, 769
 sensory, of the pneumogastric nerve, 769
 of the spinal accessory nerves, 769, 786, 873
 spinal, of the spinal accessory nerve, 769, 786, 873
 of spinal nerve, anterior, 752, 755, 757, 759, 769, 810, 812
 posterior, 752, 753, 755-759, 769, 810, 812
 of the spinal nerves, filaments of the, 759, 812
 of the trochlear nerve, 769, 774, 788, 860
 vestibular, of the auditory nerve, 769, 787
 Root-bundles of the abducent ocular (sixth cranial) nerve, 787
 of the hypoglossal nerve, 786
 of the oculomotor (third cranial) nerve, 789
 Root-ganglion of the vagus nerve, see "Ganglion of the root of the pneumogastric nerve"
 Rosenmüller, fossa of, 919, 946
 *Rostral lamina, 776 and App., note 307
 Rostrum of the corpus callosum (rostrum corporis callosi), 764, 777, 793, 795, and App., note 307
 Rudiment of the ciliary body, 915
 of the eye, 914
 of the vitreous body, 914, 915

S.

- Sacculæ, 936, 937, 939
 Sacculus, 936, 937, 939
 Saccus endolymphaticus, 836, 837
 lacrimalis, 912, 913, 915
 Santorini, notch of, see "Incisuræ Santorioni"
 Scala media, see "Canal of the cochlea"
 tympani, 930, 932, 934-937, 939
 vestibuli, 930, 934, 935, 937, 939
 Scapha, 920
 Scapus pili, 952, 953
 Schlemm, canal of, 893, 897
 Schneiderian membrane, 947, 948
 Schwann, sheath of, see "Neurilemma"
 white substance of, App., note 310
 Selera, 892-895, 897-899, 902, 915
 Sclerotic, 892-895, 897-899, 902, 915
 Sense organs, 891-956
 Sensory nerve terminals, 748-750
 Septum cartilagineum nasi, 943
 †
 intermedium, 755
 lucidum, 763, 764, 776, 781, 782, 808
 membranaceum nasi, 942
 mobile nasi, 913, 942, 943
 nasi, 905, 914, 943, 945-948
 of the nose, 905, 914, 913, 945-948
 bony, 943
 cartilaginous, 943
 movable, see "Septum mobile nasi"
 osseous, 943

- Septum orbitale, 907, 909
 osseum nasi, 943
 pellucidum, 763, 764, 776, 781, 782, 808
 posterius, 755
 † posticum (of the subarachnoid space of the spinal cord), 755, 759, and App., note 345
 (of the spinal cord), posterior intermediate, 755
 median, 756
 † subarachnoideale, 755, 759
 Shaft of hair, 952, 953
 Sheath or sheaths:
 cellular, App., note 320
 common, App., note 320
 connective-tissue (of peripheral nerves), 746 and App., note 320
 fascial, of the external rectus muscle, 907 and App., note 405
 of the levator palpebræ superioris muscle, 907 and App., note 405
 of the muscles of the orbit, 906, 907, and App., note 405
 Henle's, App., note 320
 medullary, 746 and App., note 319
 of the optic nerve, 897, 899
 arachnoid, 899
 dural, 899
 primitive, see "Neurilemma"
 of Schwann, see "Neurilemma"
 synovial, of the trochlea or pulley, 903, 904, and App., note 404
 Shrapnell's membrane, see "Membrana flaccida"
 Sight, organ of, 891-916
 Sinus or sinuses:
 circularis iridis, 893, 897
 of the dura mater (sinus duræ matris), 804-807
 confluence of, 804, 808, 860
 frontal (sinus frontales), 904, 906, 914
 of the internal jugular vein, 804, 806, 807
 maxillary (sinus maxillaris Highmori), 918, 944-947
 meningeal, 804-807
 paranasales, 944
 sphenoidal (sinus sphenoidalis), 903, 905, 907, 944, 945, 947
 venosus scleræ, 893, 897
 venous, of the cranium, 804-807
 Skin, the, 949-956
 true, see "Corium"
 Smell, organ of, 941-948
 Solitary bundle, see "Funiculus solitarius"
 Space or spaces:
 epidural, 758, 759
 intervaginal, 899
 of the optic nerve, subarachnoid, 899, note
 subdural, 899, note
 perforated, posterior, 764, 765, 774, 789-792
 perichoroidal, 893
 perilymphatic, 937-939
 subarachnoid, of the brain, 802, 803
 of the optic nerve, 899
 of the spinal cord, 759, 802, 803
 subdural, of the brain, 803
 of the optic nerve, 899
 of the spinal cord, 759
 of Tenon, 907
 zonular, 893, 895, and App., note 400
 * Spatium *vel* spatia:
 interfasciale [Tenoni], 907
 intervaginalia, 899
 perichorioideale, 893
 perilymphaticum, 937-939
 zonularia, 893, 895
 Spheno-ethmoidal recess, 944, 945
 Sphincter muscle of the pupil, 893, 896
 Spina helices, 920, 921
 suprameatum, 921, 923, 927
 tympanica (major, minor), 923, 924
 Spinal cord, 752-759, 808
 membranes of, 758, 759, 806, 807
 transverse sections of, 754, 755
 vessels of, 754

- Spinal marrow, see "Spinal cord"
nerves, 809-856
- Spine of the helix, 920, 921
suprameatal, 921, 923, 927
tympanic, anterior, 923, 924
posterior, 923, 924
- Spiral tract, perforate, 932, 935, and App., note ³³⁴
- Splenium of the corpus callosum (splenium corporis callosi), 775, 780, 783, 794, 795, 808
- Spot, yellow, 898
- Stalk of the flocculus, 767, 771
of the thalamus, lower, 792, 797
- Stapes, 922, 923, 925
- Stem of hair, 952, 953
- Stensen, canal of, 943, 946, and App., note ⁴⁰¹
- *Strands, lateral, of the pons, 766, note
- Stratum albo-cinereum inferius, App., note ⁴⁰⁰
superius, App., note ⁴⁰⁰
album profundum, 789
bacillorum, 899, note
cinereum, 789 and App., note ⁴⁰⁰
corneum, 950, 956
cutaneum (membrani tympani), 925
dorsale, App., note ⁴⁰²
granularum externum, 899, note
internum, 899, note
germinativum [Malpighii], 950, 956
griseum centrale, 788, 789, 791
colliculi superioris, 789
intermedium, App., note ⁴⁰²
interolivare lemnisci, 786
lemnisci, 789 and App., note ⁴⁰⁰
lucidum, 950
mucosum (membrani tympani), 925
nigrum, 899, note
nucleare (medullae oblongatae), 767, 772
opticum, of the retina, 899, note
of the upper or anterior quadrigeminal body, 789 and App., note ⁴⁰⁰
papillare, 950, 956
pigmenti iridis, 893, 896
retinae, 893, 895, 899, 915
reticulare of the corium, 950
(retinae) externum, 899, note
internum, 899, note
zonale (of the corpora quadrigemina), 788, 789, and App., note ⁴⁰⁰
(of the optic thalamus), 785
- Stria or striæ:
acusticae, 768, 787
auditory, 768, 787
longitudinal, lateral (stria longitudinalis lateralis), 780, 793
mesial (stria longitudinalis medialis), 780, 793
- * malleolaris, 924
medullares seu acusticae (auditory striæ), 768, 787
medullaris thalami, 763, 782, 785, 794
obtecta, 780, 793
olfactoriae (intermedia, lateralis, medialis), 765, 775
pineal, 763, 782, 785, 794, and App., notes ³⁰⁹ and ³⁰²
terminalis, 767, 781, 782, 784, 785
transversae, 780
vascularis, 939
- Stroma of the iris (stroma iridis), 893, 896
- Subarachnoid reservoirs, see "Reservoir"
- Subcutaneous areolar tissue, 910, 950, 951, 953
- Subiculum cornu Ammonis, see "Gyrus hippocampal"
- Substance, cortical, of the cerebellum, 764, 772
of the cerebrum, 785
of hair, 952
of the lens, 893, 900
of the lens, 893, 900
medullary, of hair, 952
proper, of the cornea, 893
reticulated white, of Arnold, 785
- Substantia corticalis cerebelli, 764, 772
cerebri, 785
lentis, 893, 900
pili, 952
- † Substantia ferruginea, 772, 788
gelatinosa centralis, 755
of Rolando (substantia gelatinosa Rolandi), 754, 755, 786, 796, 787
grisea centralis, 755
lentis, 893, 900
medullaris pili, 952
nigra, 775, 788, 789, 791, 792
perforata anterior, 765, 774, 775, 792, 793
posterior, 765, 775, 789
propria corneae, 893
membranæ tympani, 925
- † reticularis alba, 786
[Arnoldi], 785
grisea, 786-788
- Subthalamic tegmental region, App., note ⁴⁰²
- Sulcus or sulci (see also "Fissure," "Furrow," and "Groove"):
ampullaris, 938
anthelicticus transversus, 920, 921
auriculæ posterior, 920
basilaris, 765, 787
callosal, 777, 783, 785, 793
of the cerebellum (sulci cerebelli), 770
centralis [Rolandi], 776, 778
cerebelli, 770
cerebri, 775, 777, 778
cinguli, 777
circularis [Reili], 779, 780
corporis callosi, 777, 783, 785, 793
cruris helices, 920, 921
cutis, 950, 951
frontal, inferior (sulcus frontalis inferior), 776
superior (sulcus frontalis superior), 776, 778
horizontalis cerebelli, 770-772
hypothalamicus [Monroi], 764
infrapalpebral (sulcus infrapalpebralis), 908 and App., note ⁴⁰⁶
intermarginal (sulcus intermarginalis), 908 and App., note ⁴⁰⁹
intermedius anterior, 753
posterior, 753, 755, 768
interparietal (sulcus interparietalis), 776, 778
lacrimalis, 912
lateralis anterior (medullæ spinalis), 753, 755, 812
posterior (medullæ spinalis), 753, 755, 768
mesencephali, 766, 788, 789
limitans insulæ, 779, 780
longitudinalis fossæ rhomboideæ, 768, 787
matricis unguis, 956
medianus posterior (medullæ spinalis), 752, 753, 755
of Monroe, 764 and App., note ³⁰⁰
nasal, posterior (sulcus nasalis posterior), 944, 946
nervi oculomotorii, 764, 765
occipital, anterior (sulcus occipitalis anterior), 776
and App., note ³⁰⁸
lateral (sulci occipitales laterales), 776 and App., note ³⁰⁶
superior (sulci occipitalis superiores), 776, 778, and App., note ³⁰⁸
transverse (sulcus occipitalis transversus), 766 and App., note ³⁰⁶
olfactory (sulcus olfactorius), 774, 775
orbital (sulci orbitales), 775 and note
orbitopalpebral, inferior (sulcus orbitopalpebralis inferior), 908 and App., note ⁴⁰³
superior (sulcus orbitopalpebralis superior), 908 and App., note ⁴⁰⁶
palpebral, inferior, 908 and App., note ⁴⁰⁶
parolfactory, anterior (sulcus parolfactorius anterior), 777
posterior (sulcus parolfactorius posterior), 777
postlimbic, 777
precentral (sulcus præcentralis), 776, 778
promontorii, 927, 930
sclerae, 892
spiralis, 939
subparietalis, 777

Sulcus or sulci:
 temporal, first or superior (sulcus temporalis superior), 776 and note, 779
 fourth, see "Fissure, collateral"
 second or middle (sulcus temporalis medius), 776
 third or inferior (sulcus temporalis inferior), 755
 transverse (sulci temporales transversi), 779
 triradiate, 775, note
 tubæ auditivæ, 929
 tympanic (sulcus tympanicus), 925, 933
Supercilium, 908
Suprachoroidal membrane, 893-895 and App., note 488
Suprameatal spine, 921, 923, 927
Suprapineal recess, 764 and App., note 381
Surface of the eyeball, inferior, 892, 902
 nasal, 892
 superior, 892, 902
 temporal, 892
Suspensory ligament, see "Ligament, suspensory"
Sweat glands, 910, 950, 951, 953
Sylvian fissure, 762, 763, 774-776, 780, 793
Sylvius, aqueduct of, 761, 763, 764, 776, 789, 791
 fissure of, 762, 763, 774-776, 780, 793
Sympathetic, great gangliated cord of, 812, 816, 836, 837, 856, 874, 876, 878, 884, 888, 890
 nervous system, 883-890
Synapse, App., note 381
Synovial sheath of the trochlea or pulley, 903, 904, and App., note 484
System, nervous, central, 751-808
 cerebrospinal, rudiment of, 858
 general considerations, 745-750
 peripheral, 809-882
 sympathetic, 883-890
 pedal, App., note 486
 tegmental, 796 and App., note 405
Systema nervorum centrale, 751-808
 periphericum, 809-882
 sympathicum, 883-890

T.

Tænia or tæniæ (see App., note 392):
 • choroidea, 767, 782, 784, 785, and App., notes 370 and 392
 • fimbriæ, 784, 785, and App., note 392
 • fornix, 784, 785, and App., note 392
 • of the fourth ventricle (tænia ventriculi quarti), 767, 768, 773, and App., note 392
 • hippocampi, 782, 783, 785, 791, 794, 795, and App., note 392
 • pontis, 766 and note
 • semicircularis, 767, 781, 782, 784, 785, and App., note 392
 • tecta, 780, 793, and App., note 392
 • telarum, 784 and App., note 392
 • thalami, 784, 785, and App., note 392
 • Tail of the caudate nucleus, 766, 785, 791, 794, 795
 • of the corpus striatum, 767, 781, 782, 784, and footnote to p. 766
Tapetum, 782, 791, 798
Tarini, fascia dentata of, 763, 782, 783, 785, 791, 795
 fossa of, 764, 765, 774, 789-792
Tarsal membrane, 907, 909
Tarsus inferior, 907, 909
 superior, 903, 904, 907, 909, 911
Tegmen ventriculi quarti, 766, 773
Tegmental region, subthalamic, App., note 402
 system, 796 and App., note 405
 tract, 796, 797, and App., note 405
Tegmentum, 775, 789
Tela choroidea ventriculi quarti, 767, 773, 786
 tertii, 764, 776, 784, 785, 789, 791, 802
 choroidea inferior, 767, 773, 786
 superior, 764, 776, 784, 785, 789, 791, 802
 subcutanea, 910, 950, 951, 953
Telencephalon, 760-762

Tenon's capsule (or fascia of Tenon), 906, 907
 space, 907
Tent, 803-805, 808, 860
 of the fourth ventricle, 764, 772, and App., note 388
Tentorium cerebelli, 803-805, 808, 860
 of the hypophysis, see "Diaphragm, pituitary"
Termination of nerve fibres, 748-750
Testes, see "Quadrigenital body, inferior," and App., note 372
Thalamencephalon, 760-762
Thalamus, 760, 761, 763, 764, 767, 782, 785, 790-797
Threshold of the island of Reil, 775, 779
Tip of the nose, 942
Tissue, areolar, subcutaneous, 910, 951, 953
 connective, episcleral, 892, 893, 895
 epivaginal, 899
Tonsil (of the cerebellum), 770-773
Tonsilla cerebelli, 770-773
Torcular Herophili, 804, 808, 860
Torus tubarius, 919, 928, 946
Touch bodies, App., note 384
 corpuscle, 749 and App., note 384
 organ of, 949-956
Trabs cerebri, see "Corpus callosum"
Tract, ascending, anterolateral, 756 and App., note 380
 of Burdach, 756 and App., note 388
 * central, of the auditory nerve, 796 and note
 cerebellar, App., note 384
 direct, App., note 384
 lateral, 756, 757, 797, and App., note 384
 dorsal, App., note 384
 dorsolateral ascending, App., note 384
 of the fillet, 796 and App., note 405
 of Goll, 756 and App., note 388
 of Gowers, 756 and App., note 386
 olfactory, 765, 766, 774, 775, 862
 optic, 765, 766, 774, 789-793, 798
 pyramidal, 790, 800
 anterior, 756, 800
 crossed, 756, 757, 786, 800
 direct, 756, 800
 lateral, 756, 757, 786, 800
 spiral, perforate, 932, 935, and App., note 434
 tegmental, 796, 797, and App., note 405
 of Türck, see "Tract, pyramidal, anterior"
Tractus olfactorius, 765, 766, 774, 775, 862
 opticus, 765, 766, 774, 789-793, 798
 solitarius, 769, 786, 787
 spinalis nervi trigemini, 769, 786
 spiralis foraminosus, 932, 935
 foraminulentus, 932, 935, and App., note 434
Tragi, 920
Tragus, 920, 923, 928
 plate, 921, 922
Trapezium, 787, 796
Triangle (see also "Trigonum"):
 auditory, 768, 787
 of the fillet, 766, 768
 olfactory, see "Trigonum olfactorium"
Trigeminus group, 858-871
Trigone, see "Triangle"
Trigonum (see also "Triangle"):
 acustici, 768, 787
 collaterale, 781, 782
 habenulæ, 767, 782
 hypoglossi, 768
 lemnisci, 766, 768
 nervi hypoglossi, 768
 olfactorium, 765, 774, 775, 793, and App., note 388
 ventriculi, 781, 782
Trochlea, synovial sheath of, 903, 904, and App., note 401
Truncus corporis callosi, 780, 783-785, 790, 794, 802, 808
 lumbosacralis, 836, 856, 885
 sympathicus, 812, 816, 836, 837, 856, 874, 876, 878, 884, 888, 890
 pars cervicalis, 884
 lumbalis, 885
 sacralis, 885
 thoracalis, 884

Vestibulum labyrinthi, 926, 930-932, 934, 935, 937
 nasi, 913, 943, 944, 946, 947
 Vibrissæ, 942
 Vicq d'Azyr's bundle, 783, 785, 792
 Vicq d'Azyr, line of, 785
 Vidian nerve, 859, 862, 863, 947
 Vieussens, valve of, 760, 761, 764, 767, 771-773, 776, 788
 Villi, arachnoidal, 779, 802
 Vinculum lingulæ (cerebelli), 771
 Vision, organ of, 891-916
 Vitreous body, see "Body, vitreous"
 Vortex coccygeus, 955
 Vortices pilorum, 955

W.

Wail of the tympanum, inner, 923, 927
 outer, 924, 926, 927
 White matter of the cerebrum, 980, 990
 Whorl, coccygeal, 955

Worm, 764, 766
 lower, 770-772
 upper, 770-773, 797
 Wrisberg, ganglion of, 887 and App., note ⁴⁷¹
 nerve of, 822, 830, 831
 portio intermedia of, 765, 769, 774, 869, 873

Y.

Yellow spot, 898

Z.

Zinn, zonule of, 892, 893, 901, and App., note ⁴⁸⁰
 Zona incerta, App., note ⁴⁰²
 Zone of the iris, ciliary, 896 and App., note ⁴⁸⁷
 pupillary, 896 and App., note ⁴⁸⁷
 Zonule of Zinn, 892, 893, 901, and App., note ⁴⁸⁰
 Zonula ciliaris [Zinni], 892, 893, 901
 *Zonular spaces, 893, 895, and App., note ⁴⁸⁰

THE END.

